

Journal

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FORCING THE
RIGHT RELATIONSHIPS

2 Reforming and revitalizing defense acquisition

Robert B. Costello

The Defense Department's acquisition system has not been a victim of neglect lately. The media, the Congress, and pundits of various ideological stripes have kept it in the limelight; acquisition reform has become the order of the day. That situation is not likely to change, as the recently appointed assistant secretary of defense for production and logistics makes clear in this article. He outlines five major objectives that will serve as focal points for procurement reforms already under way and for others to come.

9 Defense procurement from a small business perspective

Vincent E. Kearns

Articles, speeches, and media coverage pertaining to defense procurement issues tend to focus on major contractors. Though subcontractors sometimes comprise 60 percent or more of a key industrial sector such as jet engine manufacturers, rarely do firms below the first tier get a chance to express their views on procurement matters. What does the "little guy" think about the defense acquisition process? In this article, the president of a small aircraft company that recently started doing business with DoD offers his opinions on regulations, management styles, and related subjects.

12 Market research can boost competition for DoD dollars

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The search for ways to foster competition among defense suppliers is well under way, thanks to various legislative and executive initiatives. As DoD buyers exhaust some of the more obvious opportunities for promoting competitive procurement, hitherto overlooked techniques should begin to receive their due. Market research is one of these, and in this article, the author highlights its virtues, explains some of the steps involved, and answers possible objections to its use. A very attractive feature of market research in the Defense Department is that the primary database already exists.

18 Product substitution and the games vendors play

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Having assumed a get-tough stance, the Department of Defense is lowering the curtain on unscrupulous contractors who try to swindle the government through assorted schemes and scams. One ruse that has attracted the watchful eye of federal authorities is product substitution, an illegal practice that bilks American taxpayers and erodes the effectiveness of our fighting forces. This article spotlights the fast-growing problem of product counterfeiting in military (and commercial) markets and notes what DoD buying activities are doing to ensure they get the genuine article.

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Absence may make the heart grow fonder, but apparently it does not do much for job performance, at least in the eyes of one's supervisor. Initial research points to a negative correlation between sick-leave usage and work performance. In this article, the authors discuss the relationship between those variables among civilian employees at an Air National Guard Installation. The results of their study, which are consistent with those of other researchers, suggest that proposals to overhaul civil service sick-leave policy could lead to increased absenteeism and reduced organizational effectiveness.

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Established in 1981, the National Training Center at Fort Irwin, California, trains U.S. forces in a realistic combat setting. As the dust flies and the tanks rumble, however, officials there sometimes find it difficult to collect the data needed to accurately assess unit performance and extrapolate exercise results to actual combat situations. This article examines the obstacles to measuring unit effectiveness on the simulated battlefield and describes several technological and procedural initiatives the Army has launched to overcome them.

34 Putting a premium on productivity in DoD

Chapman B. Cox

Federal fiscal austerity seems to be in the air these days, but regardless of which way budgetary winds are blowing, the need to provide an effective national defense remains constant. Ever mindful of its obligation amid the funding constraints that prevail, the Defense Department has inaugurated a wide range of productivity initiatives over the last several years. Their purpose is to motivate the DoD work force to get the maximum return on each defense dollar spent. In this article, the department's senior personnel manager highlights DoD productivity achievements.

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Editor's note

With this issue, the *Defense Management Journal* begins its transition from a quarterly to a semiannual publication schedule; the third and final *DMJ* for 1987 will appear in November of this year. In 1988, the magazine becomes a twice-yearly publication, in compliance with the direction of the OSD Periodicals and Pamphlets Review Board. The

board has mandated the reduction in publication frequency as a cost-cutting measure and has restricted each issue to a maximum of 48 pages. Within these constraints, the *DMJ* will do its best to keep you, our readers, informed concerning defense policy and management improvement techniques. As in the past, the editors welcome your contributions and comments.



Reforming and revitalizing defense acquisition

By ROBERT B. COSTELLO

What does the future hold for defense acquisition? A senior DoD official describes activity under way on five major fronts.

The pace of defense acquisition reform in the past year has been brisk and, as a result, the Defense Department has had to assimilate numerous major developments intended to improve the production and sustainability of the weapon systems used by our fighting forces. As the department and the military services restructure their organizations to implement these measures, changes in the way we do business are taking place across the board. All in all, these are dynamic times in what is inherently a complex and challenging environment. Being a part of the process is exciting.

To bolster efforts to improve the production and sustainability of our weapon systems, we are pursuing five objectives that take into account the principal findings of the Packard Commission report,¹ recent congressional concerns, and our own assessments. Our objectives are to improve relations between government and industry, increase the effectiveness of the procurement and logistics work force, reduce the cost of quality, revitalize the industrial base, and institute regulatory reform. Each objective has been assigned to a deputy assistant secretary within production and logistics.

Improving relations with industry. This objective is the responsibility of the deputy assistant secretary for procurement. It recognizes that in order to have a reliable,

effective national defense, we must have a vigorous and productive industrial base unencumbered by overly tense relationships between government and business. I come from a very competitive industry, and I know first-hand the pressures on managers to perform in the best interests of the company. Because the defense environment is somewhat more complex than the nondefense arena, private sector managers who must operate in that environment face even more intense pressure.

Defense industry has put significant energy into reducing the points of friction which otherwise develop when a commercial enterprise is conducted in full view of the public. For our part, we in government have an obligation to promote stable and uniform policies so that decision-makers in industry can pursue their enterprises with some confidence in the continuity of the process. We must avoid even the appearance of vindictive or arbitrary behavior.

Many of industry's concerns are well-known. They include a perceived emphasis on punitive enforcement of contract requirements rather than cooperation based on trust; unnecessarily duplicative surveillance of contractor performance by the government; lack of consistency among the military departments in contract policy matters; allegedly confiscatory policies on technical data rights; and stringent overhead cost control policies.

In order to ensure that we in the department fully understand the current condition of government-industry

¹Formally known as the U.S. President's Blue Ribbon Com-

tions and formulate plans of action.

The role and authority of the contracting officer is an especially important factor in government-industry relations. Consequently, we have established an interservice group to determine the appropriate course of action, including a possible realignment of responsibilities, to assure that the contracting officer can more effectively function as the government's primary representative in dealings with industry.

Increasing the effectiveness of the procurement and logistics work force. This objective, which comes under the cognizance of the deputy assistant secretary for logistics, involves not just doing more of the same with less, but approaching procurement and logistics tasks differently in order to get better results. It will mean greater opportunities for professional management of the tasks assigned, not fewer people.

The president has directed a 20-percent improvement in productivity government-wide, and our second objective supports that goal. Just a 1-percent improvement in the way we buy would reduce costs by \$1.5 billion.

Our effort to identify ways to better utilize people includes three specific initiatives:

- We must first ensure that we do not duplicate initiatives already under way. Therefore, we are identifying a baseline, which includes all current work force competency and utilization improvement programs that focus on procurement and logistics personnel. The Acquisition Enhancement Program, the Peer Competition Program, and various work force motivation initiatives such as quality circles and gainsharing are just a few.

- We also need to take pains to find the best programs, concentrating on areas that are now underserved. The Air Force, for instance, has set up a Logistics Experience with Industry Program that is not yet in place for the other services. Similarly, DoD has professional enhancement programs for some functional areas such as supply and transportation, but not for others.

- Finally, we need to follow through on and implement whatever mix of new and existing programs will give DoD the best results. To do so, we must define the nature of the problems we face and what the range of possible solutions is.

Communication is obviously a vital part of any relationship. We are therefore doing a number of things to open up additional lines of communication with industry. For example, the Defense Acquisition Regulatory Council goes on the road at least twice a year to conduct meetings at which members listen to concerns relating to

In addition, our office is rigorously examining the issue of duplicative reviews at both the prime contractor and subcontractor levels. We recently asked the Council of Defense and Space Industry Associations to identify 10 prime and 10 subcontractor members who can track reviews for a period of time (perhaps six months or so) sufficient to determine the magnitude of the problem. When that group has finished its work, we will quickly evaluate the data, involve other defense and government agencies, and solve the problem. Our aim is to consolidate wherever possible.

Likewise, we are taking an indepth look at special tooling and test equipment policies. An interservice group is assessing the long-term impact of recent legislation in this area and has responsibility for proper and uniform application of policy to all contractors.

Above all, balance is essential to a harmonious relationship between government and industry. Contractors have an obligation to improve practices that do not serve the nation's best interests, and industry must abandon the "catch me if you can" philosophy that has prevailed for too long. At the same time, DoD must avoid short-term solutions which could, in the long run, damage the industrial base.

I believe our personnel are of high caliber and, in general, sufficiently educated. Programs are already under way to upgrade education, training, and experience requirements for program management, contracting, and quality assurance staff. Implementation of these measures should complete the action required to fully enhance professional development among our work force.

But urgent questions remain, particularly pertaining to the "bottom line." Specifically, is the Defense Department managing things in the most efficient possible way? Can our work force improve the procurement and logistics process so that DoD concentrates less on following rules and more on "buying smarter" in the first place?

Another concern is the means we have for communicating with each other. DoD is modernizing its information systems, but in some cases the process is too slow. In order to buy and manage more efficiently, communications and data exchange must be more responsive. The technology to do this is available now. We must exploit it.

The office of the secretary of defense has taken steps to get such an effort going. The project is under the direction of a steering group composed of key deputy assistant secretaries from production and logistics and from force

project's success. We expect to set common goals and to make sure that this initiative helps us accomplish them.

Reducing the cost of quality. The purpose of this objective, being managed by the deputy assistant secretary for production support, is to seek new approaches to production and logistics support planning that will enable us to significantly improve the quality of systems and processes. Quality in this context involves both fitness for use and efficiency. The characteristics of our present posture, in the eyes of many, are high acquisition costs, long development and production lead times, and large and growing operation and support costs. We must change this perception.

Many in DoD think of quality in terms of the capabilities of a weapon system--how high it can fly, what degree of incline it can traverse, or how deep it can dive. They equate a quality weapon system with one that can do more than its predecessors. But that attitude often ignores the cost of quality, which includes the 14 plane-loads of test equipment necessary to service a particular aircraft in the field and comparable resources required for other weapon systems.

To keep such costs to a minimum, our basic thrust is to develop new ways of doing business in three important and related areas: the acquisition process, manufacturing, and operations and support. We have already established working groups to address each of these. The task

potential for improving quality at minimum cost and to identify specific candidates for prototype applications. The prototype efforts under consideration relate to a number of ongoing activities such as new acquisition programs, hardware testing during the development phase, streamlining, transition to production, manufacturing technology demonstration projects, computer-aided logistics systems, and improved inventory control methods.

Statistical process controls, for example, are one technique that we are looking to establish across the board. On a recent visit to sites in Europe where the Army has prepositioned equipment, I encountered a unit that was fully 50 percent over the standard hours allotted for vehicle maintenance, and it had thousands of vehicles to maintain. But another site was actually under standard hours on vehicle maintenance because the commander, an Army captain, had introduced statistical process controls. He had cut the cost of quality and at the same time improved readiness.

As we formulate our course of action, we will solicit support and participation from the military departments and from the private sector. The goal is to assure that DoD systems comply with criteria recently set forth by Deputy Secretary of Defense William H. Taft IV. "Quality," Mr. Taft explained, "means more than just a product that meets minimum standards. In our definition, a

Applying business judgment to the government's business

Under a pilot program set up by the Air Force, contracting officers at the Oklahoma City Air Logistics Center have not been conducting their business as usual for the past several months.

Citing the Packard Commission's recommendation that DoD adopt commercial-style competitive practices, the Air Force Logistics Command began implementing a Competition for Performance Program at the center in June 1988. The purpose of the initiative is to give contracting officers the authority to exercise business judgment in awarding contracts previously let on the basis of price alone.

Recognizing that quality and delivery performance vary among responsible contractors, the program allows contracting officers to consider those factors in reaching an award decision. In other words, a contract can go to other than the low-priced offeror. The price submitted by the firm selected may be as much as 10

percent higher than the low-priced bid.

Though applicable to most negotiated, firm fixed price contracts, the program targets small-dollar spare parts purchases in particular. Integral to the initiative is a blue-ribbon contractor list developed for each of the center's federal stock classes. Inclusion on a list indicates that a firm has demonstrated dependable quality and delivery performance on Air Force Logistics Command contracts for that class of items during the past year. The lists are a major factor in evaluating tenders.

Membership on a blue-ribbon contractor list is by application only, and the Air Force has set forth criteria that candidates must meet in order to apply. At least once a month, officials at the Oklahoma City center convene a panel to review applications for membership; the group uses internal government data to validate applications. While price remains a significant factor in evaluating offers under this program, contracting officers do have the authority to base their final decision on a combination of factors that includes

acquire systems that do not attain this standard."²

Revitalizing the industrial base. A strong industrial base is fundamental to national security both as a deterrent to aggression and as a means for providing the vast quantities of materiel to fight and win a war if deterrence fails. This objective, which is also under the cognizance of the deputy assistant secretary for production support, strongly supports the president's campaign to build a national consensus on solutions to the many complex competitiveness problems that we face.

The industrial base essential to defense includes the full spectrum of industrial activity in the national economy:

- Defense prime contractors as well as civilian end product manufacturers who can convert to defense production in an emergency.
- Subtier industries such as forgings, castings, ball bearings, machine tools, and semiconductors.
- Basic industries such as steel, petroleum, metals, ceramics, and composite fibers.
- Essential resources such as raw material, energy, capital, technology, skilled manpower, and management.

A critical problem in the United States right now is the loss of both technological leadership and manufacturing capability and capacity in industries essential to defense. Much of the difficulty is in the subtler and basic industry structure just mentioned. The semiconductor industry, for example, is highly visible as a key sector which is in technological and manufacturing trouble. But it is not alone. Others that cause concern are ball bearings, machine tools, and precision optics, and more are likely to emerge.

The Defense Department is well aware that solutions will not be easy to find. While DoD has a relatively low market share and limited direct contractual influence upon many industries, our research and development and acquisition funding does provide sufficient leverage to help promote national solutions. Moreover, we are constantly meeting with industry representatives to identify such remedies.

The PAN-based carbon fiber industry is a case in point. Production of the fiber, which is essential to the manufacture of high-strength composites, is now dependent on foreign sources; defense requirements for the product are likely to increase dramatically in the next

value? We have offered to work with contractors on various initiatives affecting the industry.

We ask only that members of the carbon fiber industry, as well as other industries, act collectively, not divisively. We also caution industry not to generate excess production capacity which the United States cannot afford to sustain. Conventionally, several potential suppliers compete for defense business, one wins, and the losers do not have an opportunity to make their unique contributions. But henceforth, if industry requests assistance from the Department of Defense, we expect a concept that enables us to tap all possible contributing technologies. The United States must establish true world-class leadership and value so that we can be competitive in the marketplace. We are waiting for industry's specific plans so that we can work together.

To do our part, the department has established a comprehensive initiative that addresses manufacturing, industrial base, and competitiveness issues. The basic goal is to create and articulate DoD's strategy for achieving and sustaining U.S. technological and manufacturing leadership which is so essential to national security. In pursuing this objective, we are taking an advocacy role with the balance of the executive branch and with Congress on technological and manufacturing issues critical to defense. We are currently developing a management plan which will identify specific tasks, responsibilities, and milestones.

Industry holds the key to its own health, but it must receive support in the form of national incentives and programs to help it compete. The Defense Department is providing such support, and this fourth objective recognizes that obligation. Once successful, our efforts will help create an environment conducive to the strong U.S. technological and manufacturing base essential to national security.

Instituting regulatory reform. We have assigned this objective to the deputy assistant secretary for installations. What is our goal? We want an environment in which DoD contracting personnel can more easily and more quickly deliver to line managers and commanders the quality products and services they want, when they want them, and at a reasonable price.

In addition, as the Packard Commission recommended, we want to move toward a system that gives more authority to the individual contracting officer, allowing that person to exercise good judgment and make sound business decisions. The Defense Department needs to rely less

²A speech delivered to the annual Reliability and Maintainability Symposium, Philadelphia, PA, January 27, 1987.

on management layers, large firms, and countless requirements. Our efforts emphasize the following major areas:

• *Communication.* Contracting officers who buy on behalf of the Defense Department are not using all the authority the regulations and laws already give them. We want to encourage these individuals to use initiative to obtain the best value for the government, recognizing that value includes quality and timeliness as well as price. The rules already give purchasing officials much leeway; unless specifically prohibited from doing something, DoD buyers should try new methods and ideas in order to improve the process.

Currently, more than 98 percent of the department's buying actions involve amounts under \$25,000. We are therefore creating an expert system to encourage contracting officers to be more innovative when conducting these transactions and to make it easier for them to do so under the rules, regulations, and procedures in place today. We have almost finished the small purchase handbook that promotes this philosophy and gives procurement officers examples to use in simplifying small purchases. We are also initiating a program so that everyone in DoD, contracting officers and their bosses alike, will be aware that we are working under new guidelines.

• *Pilot contracting activities.* The success of this effort will derive from the ideas of people who have to deal, on a daily basis, with the inadequacies and conflicts of our current system. Their input will afford a rapid, effective means for identifying unneeded and constricting rules and laws. To date, 31 activities designated by the services and the Defense Logistics Agency (see figure), are participating in the pilot program, which seeks to identify desirable regulatory reforms.

The designated contracting offices will serve as test beds for changes and will also seek better ways to do business, largely by employing methods more in line with commercial practices to procure goods and services. Class deviations from the Federal Acquisition Regulation and the DoD supplement to the Federal Acquisition Regulation are possible under this experiment, as are waivers from the provisions of any DoD procurement regulation not specifically required by statute or executive order.

In addition, we have been talking to people in the services and in industry to get their thinking on rules not required by law or otherwise unnecessarily restrictive. A contract simplification working group, composed of members from both the government and industry, has

Pilot contracting activity program

The services and the Defense Logistics Agency have nominated the activities listed below as initial participants. Relying on grass roots input, these installations will help identify unnecessarily complex or restrictive procurement regulations. They will also test procurement methods similar to those used by commercial activities.

ARMY

- U.S. Army Tank-Automotive Command, Warren, MI
- U.S. Army Engineer District, Tulsa, OK
- U.S. Army Infantry Center and Fort Benning, GA
- U.S. Army Quartermaster Center and Fort Lee, VA
- U.S. Army Armament, Munitions, and Chemical Command, Rock Island, IL
- XVIII Airborne Corps and Fort Bragg, NC
- 24th Infantry Division and Fort Stewart, GA

NAVY

- Naval Air Development Center, Warminster, PA
- Naval Air Systems Command, Washington, DC
- Naval Construction Battalion Center, Davisville, RI
- Northern Division, Naval Facilities Engineering Command, Pearl Harbor, HI
- Naval Regional Contracting Center, Philadelphia, PA
- Naval Regional Contracting Center, Washington, DC
- Naval Supply Center, Puget Sound, Bremerton, WA
- Navy Aviation Supply Office, Philadelphia, PA
- Navy Ships Parts Control Center, Mechanicsburg, PA

AIR FORCE

- Contracting Division, Norlon AFB, CA
- 3303 Contracting Squadron, Randolph AFB, TX
- Washington Area Contracting Center, Andrews AFB, MD
- U.S. Air Forces Europe Contracting Center, Lindsey AFB, GE
- Directorate of Contracting, Warner-Robins Air Logistics Center, Robins AFB, GA
- Directorate of Contracting, Oklahoma City Air Logistics Center, Tinker AFB, OK
- Research and Development Contracting, Electronic Systems Division, Hanscom AFB, MA
- Research and Development Contracting, Armament Division, Eglin AFB, FL
- Rail Mobile Garrison Program,* Norton AFB, CA
- Directorate of Expendable Launch Systems,* Los Angeles AFS, CA
- Mark 15 IFF Avionics Program,* Wright-Patterson AFB, OH
- Air National Guard Operational Support Aircraft,* Aeronautical Systems Division, Wright-Patterson AFB, OH

* Includes cognizant Air Force plant representative offices

DEFENSE LOGISTICS AGENCY

have already been subject to competition, we have revised the regulations to allow contracting officers to get supplies and services from optional Federal Supply Schedules without further competition. This change has reduced procurement administrative lead times by up to 51 days and has enabled the Department of Defense and the private sector to avoid spending time and money on additional, unnecessary competitions.

The contract simplification working group is also looking at alternate methods of obtaining insurance certification from contractors and is exploring ways to reduce duplicative equal employment opportunity compliance reviews. In a similar vein, the military departments and the Defense Logistics Agency are reviewing their implementing instructions with an eye toward simplifying the process and moving responsibility and authority to the lowest possible level. The goals are clear; we must simplify the regulations.

- **Legislation.** During the past few years, as I mentioned earlier, we have seen much legislation designed to improve the acquisition process. DoD will pursue additional legislative measures that clearly have potential for correcting serious problems, and we recently teamed with the Office of Federal Procurement Policy on a review of possible changes to existing laws.

The legislative package that we are forwarding to Richard Godwin, the Under Secretary of Defense for Acquisition, will include fewer than 20 changes to existing laws, but they all involve key issues. If Congress amends these basic laws, the result will be a significant improvement in procurement, lower costs, faster turnaround times, and fewer reviews.

Our current laws do provide sufficient leeway for innovative action, but the Defense Department, the military services, the Defense Logistics Agency, and local commands implement these laws with so many regulations and interpretations that the process has the effect of putting a new law through a funnel, allowing the contracting officer little, if any, freedom. We are not out to change congressional intent. By submitting this legislative package, we hope to direct the Congress's attention to some key issues. In the meantime, we will work within today's laws, utilizing all the flexibility they allow. That flexibility, I might add, is significant.

Overall, though, we expect a much larger payoff from changing regulations than from trying to change laws. The administrator of the Office of Federal Procurement Policy fully supports our regulatory reform goals, and we are working together to make major improvements to the

processes must supply the Department of Defense with materiel to meet its peacetime and mobilization requirements. Small business is critical to this nation's industrial base. We in the Department of Defense have an aggressive and committed small business program, which seeks to ensure that small and small, disadvantaged businesses receive their fair share of our contract dollars.

Recently, Congress set a challenge for us: increase to 5 percent the proportion of dollars awarded to small, disadvantaged businesses for defense procurement; research, development, test, and evaluation; military construction; and operations maintenance. Total DoD expenditures in these areas constitute a base of \$148 billion, and our goal for awards to small, disadvantaged businesses is \$7.4 billion. Contractors must also take a look at ways in which they can participate in this program.

The deputy secretary of defense has issued a set of policies and procedures to guide us, and we fully expect to meet the 5-percent goal within three years. To underscore our commitment, we are issuing a memorandum to the military departments and defense agencies asking them to emphasize the need to integrate the small and small, disadvantaged business program into the mainstream of the acquisition process.

We realize that our five objectives form an aggressive agenda. The Department of Defense is intensifying its efforts in support of the president's competitiveness program; our goal is an environment that assures continued growth of a strong United States technological and manufacturing base. We will also continue to work with industry to streamline our procurement practices. DoD is committed to enhancing the quality and productivity necessary to give America's fighting forces the edge they need. We are moving forward, and we want the active support of all members of the defense acquisition community. **DMJ**

ROBERT B. COSTELLO is the assistant secretary of defense (production and logistics). Before his appointment to that post, he was executive director of materials management for General Motors Corporation, a position he had held since 1982. He also served as director, liaison for the main battle tank program, in the Allison Division of General Motors and, earlier, as chief of missile engineering in the same division. Dr. Costello holds several patents in deep ocean materials, systems, and instrumentation. He earned bachelor's and master's degrees in civil engineering from Rensselaer Polytechnic

Defense procurement from a small business perspective

By VINCENT E. KEARNS

A relative newcomer to contracting with DoD puts forward some candid observations and makes recommendations for streamlining the buying process.

Editor's note: Top-ranking officials from government and industry gathered in Williamsburg, Virginia, earlier this year for the Defense Department's annual procurement conference. There they heard policy pronouncements from members of the DoD hierarchy and also had a chance to listen to speakers from segments of the procurement community less frequently represented at such forums. Among the latter was the president of one small defense contracting firm who offered the remarks adapted below. What does a non-Fortune 500 vendor think about the defense procurement process? The author has agreed to share with DMJ readers some opinions based on his company's experience.*

For more than half a century now, B. H. Aircraft Company has been manufacturing a wide range of products for the aerospace industry. In recent years, the firm has been a leading fabricator of complex weldments and assemblies of high-temperature alloys, which are components used by the jet engine segment of the industry.

Our entry into government contracting is relatively new. For all practical purposes, we had no direct dealing with defense buying agencies prior to November 1981. Since that time, we have become involved in the procurement process far beyond our initial expectations.

Our viewpoint is, admittedly, parochial. We have experience only with acquisition of jet spare parts by the

Supply Office, and, to a lesser degree, the Defense Logistics Agency. Based on our dealings with them, the following comments offer the perspective of one small business firm on a procurement system in transition.

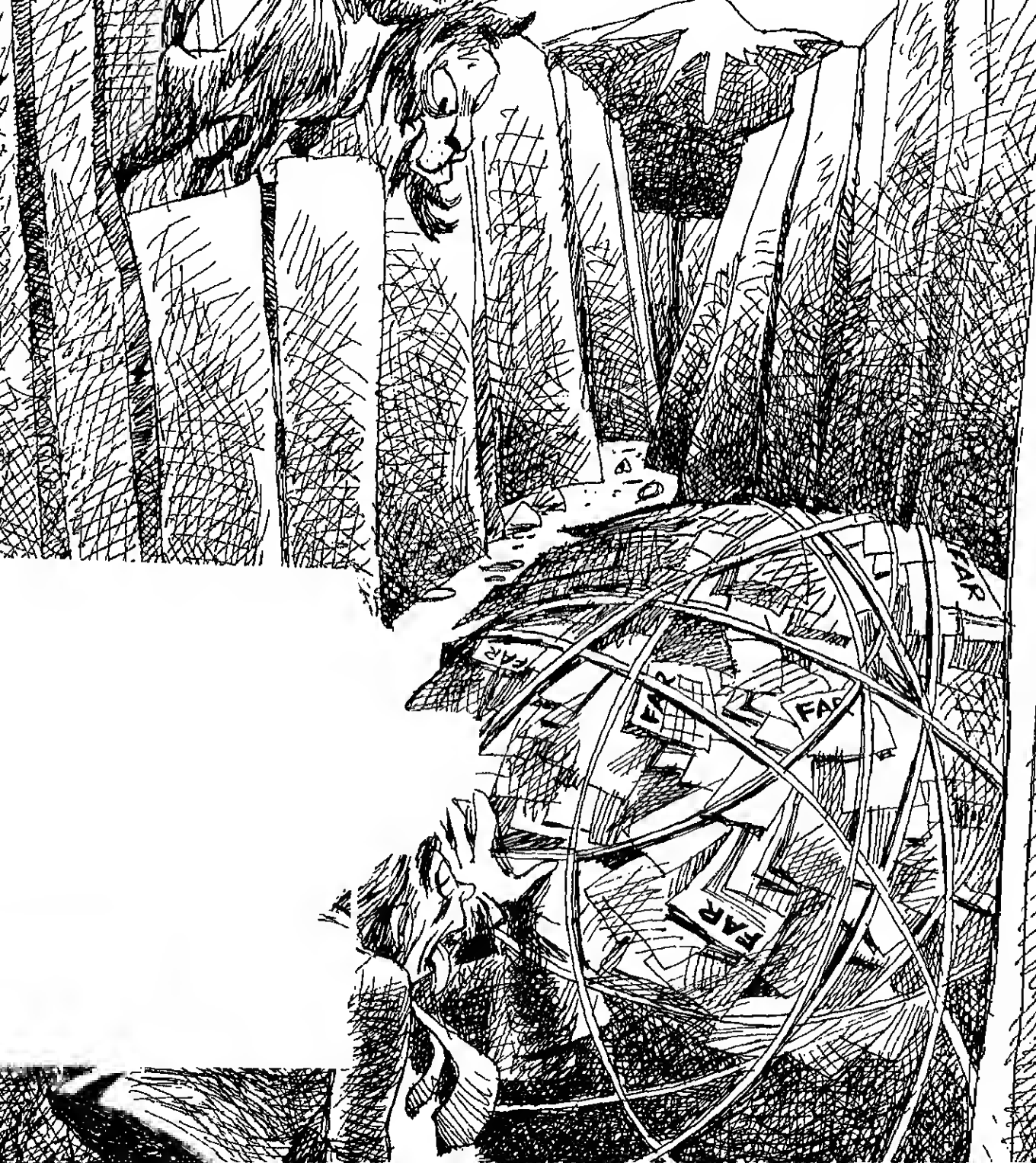
That transition has been taking place over the last four years, during which time DoD officials have implemented a variety of initiatives intended to improve the acquisition program. The so-called horror stories have pretty much disappeared from the headlines, indicating that progress has been made, especially in the purchase of spare parts. The contracting community has realized the importance of these initiatives and, in an environment conducive to honest competition, has effected lower prices for a wide range of products. Unfortunately, negative factors continue to exist and must be addressed.

In order to optimize disbursement of defense dollars, the procurement process needs more simplification and less complexity. Let us recognize what the Federal Acquisition Regulation—commonly referred to as FAR—really is: thousands upon thousands of pages of rules and regulations which I would retitile FARCE. In all honesty, I cannot determine what this overwhelming amount of print does to help facilitate or improve the acquisition of goods and services.

The inordinate mass of paperwork inherent to government procurement is both stifling to the system and expensive to the taxpayer. The major ingredient missing from the regulation is encouragement to use good old common sense. We strongly recommend that federal officials evaluate the number of forms currently required and compare them to those used by private industry. As long as the paperwork burden remains massive, form will take precedence over substance, and price evaluation can never be the prime consideration of the buyer.

According to recent reports, completing a government procurement action takes eight or nine months beyond the time needed to establish the requirement itself. This is a disgrace that should not be tolerated. If the Federal Acquisition Regulation requires that business be conducted in this manner, then the rules are ripe for change. The likelihood that anyone outside government circles would do business in such a fashion is not great.

Moreover, a system as complex and intricate as this one invites abuse. Unscrupulous individuals will take advantage of restrictive features for their own illicit gains. Simplification and standardization would reduce opportunities for undermining the purchasing process.



who showed an interest in furnishing goods and services to the military.

B. H. Aircraft, like many others, was encouraged to participate by submitting bids on products that fit within our capabilities. We agreed to do so and expended considerable time, effort, and money in preparing proposal packages, only to find that the competition advocates do not have the authority to make the ultimate decisions. This fact, naturally, generated much consternation and resulted in some heated debates between ourselves and Air Force engineering officials, who were not always receptive to our claims of competency. On the other hand, I must admit that the Air Force has been receptive at times and even though we often disagreed with the answer, has at least always given us one.

Not so the U.S. Navy. Despite the volumes of data and approval packages B. H. Aircraft has furnished over the past two years, we have yet to receive any definitive answers from the Navy. I realize that the Navy runs silent and deep, but this is ridiculous. Gentlemen, come up for air; if nothing else, it's good for morale.

I am not suggesting that we want or deserve any hand-outs or set asides. I am suggesting that the Defense Department strive for a constancy of purpose within its purchasing centers. We small businesses sometimes seem to be doing battle with three warring fictions at the procurement commands when we deal with the procurement people, the engineering staff, and the competition advocate. Mike that four fictions; I almost forgot the small business administration office. It is bad enough that the Federal Acquisition Regulation in effect mandates an adversarial relationship between the military and the contractors. One would think that the folks in government could at least get along with one another.

We are well aware that the military services do not bring all these rules and regulations upon themselves. Congress must abate its micromanagement if defense procurement is to have any chance of digging out of the quagmire. The onslaught of resolutions and guidance from Capitol Hill is mind-boggling. No one seems to know whether or not he or she is in full compliance with the latest mandates from the national legislature.

Some of us believe that the acquisition community needs more than an influx of competition to strengthen the system and give the taxpayer the best return on his money. Perhaps we should go back to the days when oversight of the Defense Department was primarily the responsibility of the two Armed Services Committees in

regarding oversight. A number of high-level military personnel have made statements that criticize micromanagement of DoD by the Congress and we agree. By the same token, we see the identical problem within the department itself - DoD officials micromanaging the defense industry, companies both large and small. If the Pentagon's criticism is indeed valid and Congress does not always know what it is talking about when dealing with military procurement actions, then I submit that the same stricture applies to DoD. In other words, the military does not always know whereof it speaks when dealing with the design, development, and manufacturing of products. Perhaps less interference would result in more efficiency for all concerned.

As a contractor involved with the current system, I am very sensitive to procurement rules and regulations and their effect on our ability to compete profitably in the marketplace. I know that some recent changes have definitely enhanced our opportunities to participate in the acquisition process. On the other hand, room for improvement remains. Too many layers of bureaucracy exist in government, whether through statute or convenience, and we also need to improve communications between those in defense industry and those in government service. Nor should we forget the public, which has a right to know its tax dollars are supporting well-equipped and dependable armed forces.

The media stories about overpriced, poor-quality parts have subsided. But we have a long way to go before the nation regains complete confidence in our activities. This is a distraction that we must deal with on an ongoing basis, or the consequences will be disastrous for all of us. If the goal is to achieve a dynamic system that maximizes output in the face of budget restraints, changes must continue to occur. Serious attempts to improve the efficiency of the procurement process will require sacrifice from all participants.

Let us trust that a continuing reassessment of the system will delineate our individual roles more clearly and result in a relationship beneficial to all parties. More importantly, let us hope that constructive, candid self-criticism will restore public confidence in our collective ability to discharge a vital mission. **DMJ**

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Market research can boost competition for DoD dollars

By JOHN J. MULHERN

Tapping an underused resource could open new competitive vistas for defense procurement. The tools and materials are at hand, and the author has some suggestions for making the most of them.

The Competition in Contracting Act of 1984 requires it.¹ Other major acquisition policy documents endorse it. And as the military services exhaust more obvious means for promoting competitive procurement, it is becoming an increasingly attractive resource to exploit.

"It" is market research, and defense acquisition managers can use it to identify potential new qualified sources for services, systems, subsystems, assemblies, components, and piece parts.² In the military departments today, pursuing competition is often the responsibility of buying office personnel who have little acquaintance with the experience of their counterparts in the other services or even of other offices in their own service. By screening

the experience of others, buying offices or competition advocates can glean information about market capabilities and thereby hone the Defense Department's competitive edge.

Procurement personnel already have easy access to the accumulated buying experience of their own services through their logistics commanders. With additional effort, they can review the experience of other services through the Defense Acquisition Management Data System. It records all prime contract actions of the military services, including awards, modifications, and terminations, valued at \$25,000 or more (with certain exclusions such as classified contracts).

This fully funded database is part of the Federal Procurement Data System. Congress and the military departments now use it primarily to determine total contract awards, the geographical distribution of awards, recipient demographics, and the extent of competition. Members of Congress have also turned to it for other purposes such as obtaining information about the costs of supporting individual weapon systems. As with most databases, this one provides a wealth of information useful in ways probably not envisioned by its inventors.

DoD does not routinely provide direct access to the system, but contract information pertaining to all the services is available in user-friendly formats from commercial information analysis vendors, who buy the basic data from the Federal Procurement Data Center. The

¹See Public Law 98-369, Sections 2711 and 2723.

²These nominally new sources may include those that already supply the buying office through an intermediary such as a systems contractor, those that already supply other buying offices of the same agency directly, or those that have a more remote connection. The Federal Acquisition Regulation already requires that buying offices synopses solicitations for publication in Commerce Business Daily, and some may view synopsizing as a form of market research. Synopses, however, are prepared late in the contracting cycle, while market research should result in identification of the structure, performance, and behavior of a market before the contracting cycle begins. Its purpose is to help the program manager or buyer predict what

though the process itself involves large amounts of data covering a wide range of goods, services, buying offices, types of contract, and other variables. To collect this data, DoD uses DD Form 350; the civil agency version is Standard Form 279. In effect, the process relies on the same information used by researchers on the selling side of the market, but it accommodates those on the buying side. How should buyers proceed? They simply take the following step-by-step approach.

First, the competition advocate at an activity responsible for buying or supporting a product screens the all-service database. For commodities, the appropriate initial sorting code is the product or service code; for weapon systems and selected other items, the user should begin with the system or equipment code and then use the product or service code.³ Both are available in the *Department of Defense Procurement Coding Manual, Commodities and Services Reported on DD Form 350*, which carries the Directorate of Information and Operations Reports number MN02. The remaining discussion focuses on weapon systems-related items because market research on such items illustrates a more complex process and because they account for a major portion of the acquisition budget.

Next, the competition advocate arranges sorted data into convenient report formats. One of these might include the following data elements for all items that appear under a given system or equipment code:

- Product or service code in ascending numeric order.
- Item description in plain language.
- Contractor name and address in ascending alphabetical order.

³The system or equipment code may address either an entire system such as an airframe or a jet engine, or it may address some component part of a system. From the military buyer's point of view, the system code is the primary data element for sorting, because it in effect identifies a family of technologies, including manufacturing technologies. Identifying systems first and then product or service codes puts a buyer well on his or her way toward identifying sources for replacement parts.

Industrial practice, particularly the use of computer-aided design techniques, provides a useful analogy for understanding the value of this approach. The computer-aided designer has the option of looking at a locomotive in toto, for example, and then focusing on and blowing up one part of it so that the assemblies, components, and eventually the individual piece parts become visible on the screen. In other words, the designer or other user can gain the correct frame of reference immediately. A similar

for performance and facilitates subsequent steps.

- Extent of competition, which allows users to determine the competitive status of the contract and, by inference, of the market for the items.

- Dollar value, which is an indication of the contractor's capability (large dollar value is a proxy for extensive capability).

- Purchasing office name and address, which enables users to quickly identify the extent to which buying activity in those items is dispersed.

What this initial activity reveals is vendors who have been successful in winning current contracts. Such firms can legitimately claim that they are well-qualified to perform additional defense-related work. Vendors who have successfully performed on current contracts for an Air Force system that is similar to a Navy system, for example, are high-probability candidates for solicitation by the Navy, which should seek expressions of interest from them.

In the event that the first search fails to yield new prospects, the competition advocate can carry the pro-

Compiling the DD350 database

The Defense Acquisition Management Data System is also known as the DD350 database because of the form used in reporting individual contract actions. Input to it comes from the logistics commanders—the Army Material Command, Air Force Logistics Command, and, acting for the deputy chief of naval operations (logistics), the Naval Supply Systems Command—who receive individual contract action reports for large contract awards (those valued at \$25,000 or more) and summaries of smaller contract actions from their buying activities and then develop single-service databases. They forward tapes of these databases to the office of the secretary of defense, which consolidates them into the Defense Acquisition Management Data System. The tape for that system in turn goes to the Federal Procurement Data Center for consolidation with the contract reports of the civil agencies. The contract reporting process is thoroughly institutionalized within DoD and, because Congress wants to know where defense money goes, continued funding is likely. The cost of retriving data from this in-place system is negligible, though gaining direct use is not necessarily a trivial matter, since the system is not

cate can use a contract number in the database to identify an Air Force contracting officer who awarded one or more contracts of interest. The Air Force official knows which firms besides the awardee were responsive to the solicitation. Such information broadens the base of possible sources for the Navy competition advocate, who can approach these newly identified candidates to determine their interest.

and in markets for durable goods such as houses and automobiles. Corporate materials managers do so as well, though they may call it sourcing. Granted, we usually define market research from the seller's standpoint, but the information and techniques vary little from one side of the market to the other.

Objection: The DD350 database captures only prime contractors and thus misses a major part of the market.

The mere fact that a major prime contract is let noncompetitively does not mean that the contractor is performing work on it in a noncompetitive market; nor does it mean that the price does not reflect competitive pressures.

A final and important step involves contractors who may have answered the solicitation or are otherwise known to the Air Force contracting officer, for example, but whom that service did not consider responsive and responsible. These contractors may nonetheless be good prospects for meeting requirements for quality, delivery, and price, and the Navy can perhaps bring them into the vendor base over time. If this or any of the preceding actions produces a competitive situation where none existed before, it will increase DoD's opportunities for obtaining best value on future purchases.

As is the case with other suggestions for tapping previously underused resources, the devil's advocates demand a hearing. The following objections are most likely; none of them is telling.

Objection: If it really can work, why didn't someone think of using the DD350 database for market research before?

Response: Sophisticated contractors already have and do employ user-friendly versions supplied by commercial information vendors such as Data Resources Incorporated. The seller, however, is not the only party who can benefit from market research, even though the seller may be the most familiar user for such research in the consumer economy. There, the seller takes the initiating role and follows through with advertising and sales. In the past, the Department of Defense has not had a comprehensive and effective mandate to find additional sources and to seek out new technologies in the aftermarket. With the exception of the small coterie that works on industrial

Response: While the DD350 database captures only prime contracts, it does capture many subcontractors, since prime contractors are often subcontractors as well, even in the case of major systems such as the Northrop subcontract to McDonnell Douglas on the F/A-18 program. In the shipbuilding industry, to cite a second example, manufacturers may supply fittings under subcontract to a building yard such as Bath Iron Works and sell the same items directly to a field contracting activity such as the Navy Ships Parts Control Center in Mechanicsburg, Pennsylvania, or a naval shipyard. In the case of Northrop, the manufacturer is a subcontractor and will be invisible to the DD350 database; in the shipbuilding case, though, the same manufacturer is a prime and a subcontractor and will show up in the database.⁴ Moreover, such dual roles are likely to become increasingly common as greater numbers of original manufacturers once again become direct suppliers, thanks to the DoD breakout program.

Economists have long recognized that the prospect of competition (potential competition) can have a depressing effect on a contractor's pricing behavior, regardless of whether actual competition occurs. Potential competition changes marketplace conditions to the short-term benefit of the buyer and in effect results in a competitive contract, even though not reported as such. Because the contract reporting system fails to reflect potential competition, it may have a bias toward underreporting competi-

tive effects in military markets.

The reporting system may have that same bias by virtue of its exclusive focus on prime contract awards. The mere fact that a major prime contract is let noncompetitively does not mean that the contractor is performing work on it in a noncompetitive market; nor does it mean that the price does not reflect competitive pressures. Many prime contractors, sometimes with DoD or military service guidance, themselves seek dual sources for assemblies, components, and piece parts that appear in an assembled product.⁵

In fact, on a given weapon system, the prime may pass through 50 percent or more of the contract's value to subcontractors. Consequently, defense buying organizations would be able to improve their knowledge of the marketplace if they had access to a first-tier subcontract reporting system such as that used by the National Aeronautics and Space Administration (NASA Form 667) for other purposes. Some in DoD and industry have tended to oppose such reporting in the past as costly and burdensome, but the benefits might outweigh the difficulties involved.

The currently unreported competitiveness of the supporting tiers quite conceivably has a greater effect on the price, quality, and delivery of a contract than does the

capacity), the sole-source prime's ability to exact and pass along price, quality, and delivery advantages from subcontractors may be considerable.

Objection: In the event of mobilization, competition will cease to be a major concern, effectively eliminating the need for market research to develop second or additional sources for goods and services; hence the utility of the DD350 database as a market research tool will greatly diminish as well.

Response: On the contrary, the value of the competition advocacy program and the information on industrial capability that it provides, not to mention the industrial capability itself, would be of inestimable value during a mobilization. Under such circumstances, acquisition personnel will need to know what they can do to procure more items faster than during peacetime operations. If they have already identified second sources and mastered the art of finding those sources, they will be far ahead of their counterparts in previous mobilizations.

The belief that competition would go away during mobilization probably reflects an understandable concern for some of the side effects of competition, such as increased lead times associated with the extended synopsis period (the time between the appearance of a solicitation synopsis in the *Commerce Business Daily* and the

By using the DD350 database as a market research tool, DoD's competition advocates and contracting officers can put the services on a more even footing with contractors as information managers.

reported competitiveness of the prime contract. If those supporting tiers are broad (many firms) and deep (much

⁵Contractors seek dual sources ostensibly for the same reasons that the federal government does. Some contractors have even developed their own competition advocate programs to gain the advantages of competition when the volume of demand justifies maintaining more than one supplier. Prime contractors are also concerned about quality and reliability, and they will seek additional sources if the current supplier does not provide adequate quality and reliability. At the same time, primes are well aware of the cost involved in developing a new source and

actual issuance of the solicitation itself), the justification and approval process, and other new procedures. But the delays in contracting associated with competition belong to an adjustment phase, and officials are streamlining contracting procedures to rectify the time lags.

Objection: The DD350 database does not address all international military markets and is therefore inadequate for market research purposes.

Response: Although some of the reports generated from the DD350 database do not reflect overseas purchases, the database itself does include these purchases. In addition, one can track international military market

Thanks to developments in automated database management, proper manipulation of DD350 information would allow each service to benefit in a comprehensive way from the contracting experience of the other services.

Response: The government cannot yet verify the accuracy or completeness of code reporting, although the experience of the Federal Procurement Data Center, which has studied the issue, does indicate a high degree of responsiveness in submitting individual contract action reports.⁶ The Federal Acquisition Regulation requires entry of all applicable codes on contract action reports for systems or equipment. Ensuring proper entry of the code is thus a matter of training and compliance.

DoD's Washington Headquarters Services reportedly holds Defense Acquisition Management Database records that are in good condition from 1966 forward. Since that time, approximately 2,500 three-place system or equipment codes have accumulated, and they sometimes give the appearance of not being perfectly consistent. As shown in the *Procurement Coding Manual*, for example, the Navy and the Air Force use the same code (CNP) for the AGM-88 HARM missile and the space shuttle 64411F, respectively. Obviously, if two or more different systems have the same code, the DD350 database becomes more difficult to use for market research.

Fortunately, the Federal Procurement Data Center

ment Data Center, which thus is now able to provide data by weapon system to its military service users.

In addition, the center performs database searches which cover not only military department contracts but also those of the closely allied Department of Energy and the National Aeronautics and Space Administration, both of which use suppliers comparable in quality to those already in the DoD vendor base. The contract award records of these agencies could suggest likely sources for the military services.

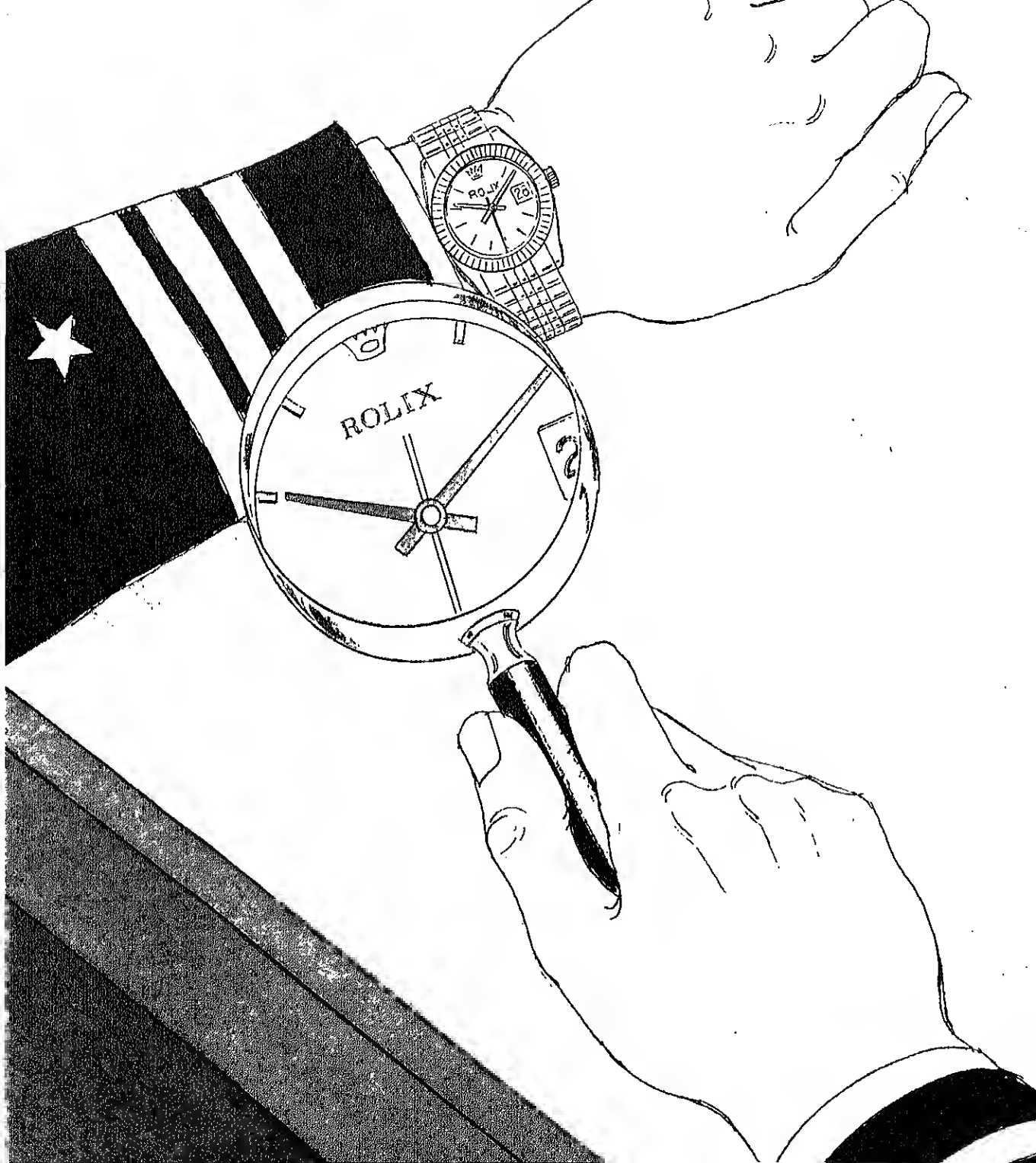
By using the DD350 database as a market research tool, DoD's competition advocates and contracting officers can put the services on a more even footing with contractors as information managers. Thanks to developments in automated database management, proper manipulation of DD350 information would allow each service to benefit in a comprehensive way from the contracting experience of the other services. At the same time, this application would complement other efforts (projections of military department purchases, for example) to reduce defense market information costs and barriers to entry.⁸ Because the DD350 database itself already exists, marginal implementation costs make the concept even more attractive, especially since the investment could yield a high return in the form of greater competition for defense procurement dollars. **DMJ**

⁶The General Services Administration verified this responsiveness in its audit of the Federal Procurement Data Center's 1984 data; see the center's Standard Report, Fiscal Year 1985, Fourth Quarter (Washington, DC: General Services Administration, 1985).

⁷The Federal Procurement Data Center uses a two-digit service prefix in addition to the three-digit system code, so that system codes are unique across the entire database; in other words, two items purchased by different services cannot have the same code in the center's database.

⁸Since 1981, the office of the secretary of defense has been using the Defense Economic Impact Modelling System, developed jointly with Data Resources Incorporated, to provide these projections; in 1983, the Office of Industrial Base Assessment undertook a major initiative to encourage use of the projections.

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Product substitution and the games vendors play

By THOMAS J. GELLI

Purveying bogus wares ranging from fasteners to seafood, a few conniving contractors weave elaborate webs of deceit to gyp the government. What Uncle Sam sees is not always what he gets.

Imitation, it is said, is the sincerest form of flattery. To the Department of Defense, though, some mimicry represents an escalating problem that is hilkng American taxpayers and jeopardizing the health and safety of the men and women who serve in the nation's armed forces.

Imagine, if you will, the following scene. A military aviator flying at 35,000 feet notices a hairline fissure in the nose of the aircraft. Upon further examination of the aircraft, he sees that the bolts holding the wings to the fuselage are beginning to bend and crack. He requests permission to land at a nearby air base, but is told that the runways are closed for repairs necessitated by the builder's use of substandard concrete. Given the situation, he decides to eject. Looking up from his harness, he discovers withered and brittle parachute cord from which his life literally hangs by a few threads.

Ridiculous and far-fetched, you say. Though contrived, the preceding vignette is not wildly implausible. In fact, over the last several years, a few defense contractors have provided DoD with the kind of defective materiel depicted above. Fortunately, a vigilant cadre of government investigators, auditors, and quality assurers is uncovering such misconduct before it results in too much damage, and they are bringing the perpetrators to justice in record numbers.

In FY 1986, DoD suspended or debarred 885 contractors, more than twice as many as it did only two years earlier (see Table 1).¹ Some of the offenders

20 shows, some have repaid the government nearly \$64.3 million in fines and restitution, bringing total monetary recoupments for the last three years to \$134.7 million.¹

One misdeed of increasing concern to defense officials is the rapidly expanding practice of product substitution. It occurs when a contractor deliberately sells inferior or defective products to an unsuspecting government buying activity that has paid for the genuine article as specified by contract. In the civilian sector, such deception is perhaps most common in the international fashion industry.

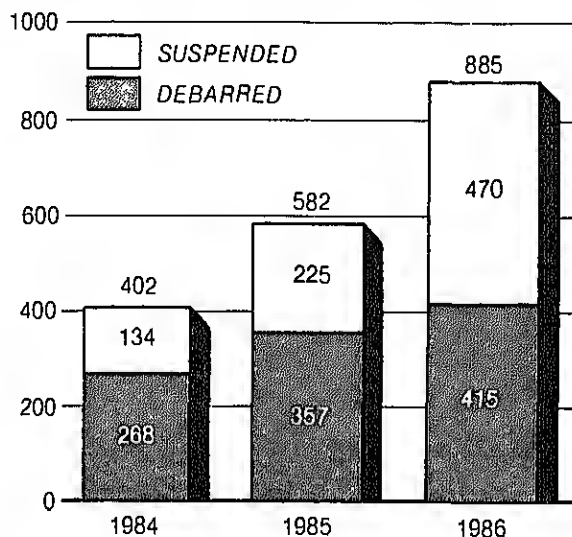
Of late, though, the phony-merchandise scam has spread to a wide variety of product sectors, from toys and pharmaceuticals to military spare parts. It may constitute the fastest-growing and most profitable "business" in the world.² Testimony given before the House Energy and Commerce Committee in 1983 indicated that product counterfeiting robs legitimate manufacturers of \$20 billion annually and, according to the Commerce Department, may have deprived Americans of as many as 750,000 jobs.³

While the counterfeiting of Gucci bags, Cartier

¹Data provided by the Office of Inspector General, Department of Defense.

²Thomas C. O'Donnell, Elizabeth Weiner, Hazel Bradford,

suspended and debarred, fiscal years 1984-1986



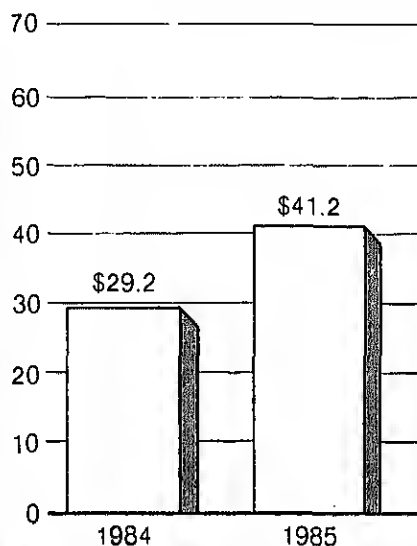
Source: Office of Inspector General, Department of Defense

watches, and Chanel perfume is reprehensible, copycat luxury items do not put life and limb at risk. Unfortunately, the hogus products that some defense suppliers have tried to fob off do. Combining twentieth-century ingenuity with old-fashioned flimflam, these contractors have gone to great lengths to shortchange Uncle Sam.

Consider, for example, the seafood wholesaler who furtively entered a locked storage area and substituted freshly caught shrimp for older ones that government quality assurers had targeted for inspection. Taking further liberties, the same individual removed inspection tags from acceptable batches and affixed them to uninspected, substandard ones. Nor did the web of deception stop there. The enterprising jobber went so far as to primp the prawns with a dye not detectable through routine inspection.

Attempts to foist hogus products come in many guises, of which one of the more common is scrape-and-switch. A supplier simply expunges the logo, stenciling, or other telltale markings from an inferior, often foreign-made look-alike and then passes it off as the higher-quality item to which quality inspectors have given their blessing. Defense Department officials have uncovered variations of this ruse in attempted sales of metals for aircraft and

fines, forfeitures, restitutions, civil settlements, and judgments, fiscal years 1984-1985



▲ Millions of dollars

* Department of Justice Prosecution

Source: Office of Inspector General, Department of Justice

from overshooting the runway.

Other forms of deception include falsifying shipment invoices and the doctoring of test results, as one Air Force contractor is doing in order to conceal the use of substandard concrete for runway repair. Perhaps the most notorious goes to a midwestern contractor who submitted forged laboratory reports to the Department of Defense of substandard parachute cord. Eventually, suspicious DoD inspectors tested the cord, which was more than 25 years old and grossly inferior. Upon further examination, they discovered that the contractor had attempted to conceal the age of the cord with a chemical solution that further deteriorated the product.

Or maybe the prize for chutzpah should go to a Texas-based contractor indicted last December for selling substandard and used parts for helicopters, and missile systems. In an attempt to cover up the investigation, company officials allegedly offered bribes and marijuana to government inspectors

Ringling up savings

The DoD inspector general's office has been displaying something of a knack for alchemy lately. It seems to be routinely transforming the copper and nickel contained in today's dimes and quarters—at least those used to make certain phone calls—into a savings gold mine.

In fiscal year 1986, the DoD hotline for reporting fraud, waste, and abuse lit up the Pentagon switchboard 10,557 times. Some 5.8 percent, or one out of every 17 calls, were substantive enough to put DoD and federal investigators hot on the trail of suspected wrongdoers.

Acting on information received via the hotline, auditors and investigators last year brought the curtain down on a variety of illegal activities, including mischarged contract labor hours, fraudulent CHAMPUS billings, and product overpricing. DoD officials cannot state with certainty the exact amount saved and recovered due to the hotline, but several recent cases that evolved from phone tips indicate that the figure may run well into the millions of dollars.

During the last six months of FY 1986, for example, one contractor reimbursed the government more than

\$940,000 after auditors discovered that the firm was enjoying significantly larger-than-negotiated profit margins on selected spare parts. Thanks to another call, officials were able to remove an activity commander whose managerial negligence had resulted in the unwarranted expenditure of \$400,000 in overtime pay. Still another case closed during the last half of FY 1986 saw a contractor's on-site manager pay a stiff fine and go to prison for 18 months because he had doublebilled the government for nonlabor hours.

Organizationally, responsibility for overseeing the defense hotline program has shifted to the newly established directorate for special programs in the DoD office of inspector general. The department made the move in anticipation of an upsurge in hotline activity likely to follow the recent appeal for information on industrial-security breaches.

Involving nearly 20,000 military and civilian personnel, DoD inspector general operations—including the hotline program—incurred costs of \$533.6 million during the final six months of fiscal 1986. Was the money well-spent? According to the January 19, 1987, *Federal Times*, those operations resulted in actual and prospective savings, recoveries, and restitutions of \$14.3 billion. That's a 27-to-1 return on investment—a nice piece of change indeed.

fatal crash of a WNBC traffic-report helicopter last fall, authorities fished the fallen chopper from the Hudson River and examined the wreckage for signs of structural or mechanical defects. Though unable to state with certainty the exact cause of the crash, aviation safety officials speculate that one factor was a faulty clutch, the parts of which did not meet government specifications.⁵

The burgeoning trade in bogus auto parts contributes to similar problems, in many cases threatening both the economic well-being and the highway safety of Americans. Not long ago, for example, one U.S. auto producer found its name on replacement brake shoes so soft they could be scratched with a fingernail.⁶ The tragic consequences of such deceit were evident a few years ago when a bus equipped with counterfeit brake linings plunged over a Canadian cliff, killing 15 people. Not surprisingly, major companies such as Ford and General Motors are working with law-enforcement authorities to quash the

illegal manufacture and distribution of phony parts.

Of concern to government and industry officials alike is the number of counterfeit high-strength fastening bolts finding their way into domestic supply arteries. In May 1986, the Industrial Fastener Institute disclosed the infusion of countless foreign-made substandard fasteners into U.S. inventories, and officials at the institute conceded the near impossibility of successfully tracking down and ferreting out the counterfeits. A number of the suspect bolts have already passed from the warehouse shelf to in-service equipment, making efforts to locate and remove them even more difficult.

Upon learning of the problem, the Defense Industrial Supply Center in Philadelphia, Pennsylvania, which buys most of the fasteners used by the military services, promptly alerted government agencies and defense contractors. In June 1986, the center began testing grade-5 and grade-8 bolts purchased under 123 contracts. Although the inspectors found no substitutions in their sample of grade-5 fasteners, they did discover that about 6 percent of the grade-8 bolts were counterfeits. Defense activities use grade-8 bolts in assembling heavy ground

⁵ "Defense Firm Indicted in Sale of Faulty Aircraft, Missile Parts," *Washington Post*, December 10, 1986.

The Pentagon's campaign to curb contracting fraud continues to roll along at a steady clip, leaving in its wake a mounting number of debarred and suspended contractors.

According to the DoD Inspector General's most recent *Semiannual Report to the Congress* (May 30, 1987), the Department of Defense debarred 230 contractors during the first half of fiscal 1987. That number is the largest ever for a six-month period and nearly 4 percent more than the Defense Department debarred in the last six months of fiscal year 1986.

The first half of FY 1987 also saw DoD suspend 204 contractors and recoup \$52.7 million in fines and restitutions.

signed more than 470 blanket purchase agreements with independent laboratories that are testing suspect material ranging from electrical cable to sheet metal. Last fiscal year, the DoD agency tested and rejected material valued at \$3.4 million. Currently, it is looking into more than 200 cases of alleged product substitution involving some 8,900 national stock numbers.⁷

1986, he made it clear, however debar or punish companies. DoD and the military services secretary encouraged defense admit wrongdoing and added self-disclosure to exclude defense contracts, so long as action against the individual improprieties.

Apparently, the message got speech, the *Wall Street Jour*. Motors Corporation's Hugh announced plans to fire four with alleged contract overcharge came in the wake of an uncovered pricing discrepancy M-1 tank thermal-imaging system notified the Justice Department the government several dollars.

Despite the growing list of fines, and indictments, the firms doing business with DoD. The department's actions against notice to all members of the

To date the Defense Logistics Agency's four supply centers have signed more than 470 blanket purchase agreements with independent laboratories that are testing suspect material ranging from electrical cable to sheet metal. Last fiscal year, the DoD agency tested and rejected material valued at \$3.4 million.

The Pentagon's crackdown on contractor fraud and foul play has perhaps come as a rude awakening to flimflammers who saw DoD as an easy mark. In a speech last fall to representatives of 35 large defense contractors, secretary of Defense Caspar W. Weinberger affirmed his

the old buyer-beware bromide defense procurement. Federal investigate all suspected and impropriety, and they will use administrative sanctions are necessary of the defense contracting process.

⁷"Counterfeiting and Unauthorized Product Substitution Problem," unpublished fact sheet, Directorate for Quality

THOMAS J. GELL is associate Management Journal. He has

How does absenteeism affect federal workers' performance?

By ROBERT P. STEEL
and
GUY S. SHANE

*Well-intentioned proposals to trim federal sick-leave benefits
will not necessarily alleviate budgetary ills
and may in fact have undesirable side effects.*

Concern over the mounting national debt has prompted budget analysts in both the public and private sectors to search for ways to staunch the red ink on government ledgers. The President's Private Sector Survey on Cost Control, popularly known as the Grace Commission,¹ has been a major source of such cost-cutting proposals, one of which would result in far-reaching revisions to federal sick-leave policy and benefits. If adopted, the commission reported, its proposal would yield \$3.7 billion in savings over a period of three years.

Any measure likely to reduce federal spending by that order of magnitude clearly deserves serious and thoughtful consideration. A logical starting point is the literature on sick-leave policy,² surveyed below. Also relevant are the results of a recently completed study of sick-leave usage among civilian workers at an Air National Guard

installation. Going beyond fiscal impact, the Air National Guard research sought to break new ground by investigating the relationship between absence from the job and employee performance.

Current policy and proposed changes

Just what did the Grace Commission recommend? Chief among its proposals was a 130-day ceiling (approximately six months) on the amount of sick leave a federal employee may accumulate. Under current policy, an employee earns 13 days of sick leave per year regardless of rank or seniority and can accrue unlimited amounts of unused sick leave during his or her federal career. Workers can also count unused sick leave as additional time-in-service for purposes of calculating retirement benefits, a practice the commission would like to see discontinued.³

Standard practice in the private sector seems to have greatly influenced the panel's recommendations. Typically, private concerns restrict the amount of sick leave an employee may accumulate,⁴ and they normally do not

¹ President Ronald Reagan established this task force in 1982 and directed that it employ private-sector expertise to develop an agenda of cost-containment measures achievable via executive or legislative initiative. In 1984, the commission submitted to the president a report containing 2,478 recommendations which the panel projected would lead to savings of \$424 billion over a three-year period.

²See, for example, Richard T. Mowday, Lyman W. Porter,

³U.S. Air Force Regulation
Specific Types of Absence." Ju'

absenteeism, because it provides a means for relieving tension and reducing stress, can be functional as well as dysfunctional.⁹ Nonetheless, the consensus is that from an organizational perspective, higher rates of leave usage constitute dysfunctional behavior.¹⁰

personality negative effect on work performance and mission capability become vital issues. What remains to be determined is whether sick-leave usage by federal workers does in fact have an impact on job performance. Our research team examined this relationship using a

Results of previous research indicate that 10 to 20 percent of a work force may use 80 to 90 percent of the sick leave within an employing organization. While our data were not quite that dramatic, they did reveal a similar pattern.

Of particular concern to the organization are the consequences of such behavior, including increased labor costs and decreased unit effectiveness. Much of the additional labor cost derives from the larger payroll required to retain a pool of replacement employees. Presumably, if absence rates decline, the organization can cut labor costs by reducing the number of nonessential workers it employs.

Behavior that detracts from organizational effectiveness is, by extension, detrimental to mission accomplishment. High absenteeism, researchers contend, is likely to "reduce the overall productivity of workers."¹¹ In addition, replacement personnel assigned to mission-essential jobs may lack the skills and knowledge of regular employees, thereby further eroding an organization's performance and effectiveness.

An Air National Guard station study

Despite the widespread belief that absenteeism has a negative impact on performance, researchers have done little actual study of the purported relationship. In the rare instances when they have, the effort has usually been incidental to some other, larger research objective.¹²

If, as we and others suggest, adopting the Grace Commission's recommended revisions to civil service sick-

sample of 154 full-time civilian employees at an Air National Guard station in the western United States.

Study participants worked in squadron operations and aircraft maintenance areas, including clerical and administrative support, aircrew scheduling, avionics mechanics, metalworking, and welding. The typical respondent was a male (93 percent) in his thirties. For purposes of this study, absenteeism was any usage of authorized sick leave. The activity provided sick leave data on all employees in the sample for the 1983 calendar year.

Figure 1 on p. 26 shows the amounts of sick leave used by these Air National Guard workers during 1983 and the percentage of employees at or below given levels. Leave usage ranged from 0 hours to 324 hours (or about 41 days). The 324 hours were almost double the 164 hours taken by the next-highest user; hence, 0 to 164 is perhaps a more representative range for purposes of analysis. The average amount of sick leave used was 47 hours.

Results of previous research indicate that 10 to 20 percent of a work force may use 80 to 90 percent of the sick leave within an employing organization.¹³ While our data were not quite that dramatic, they did reveal a similar pattern. Some 30 percent of the respondents took 66 percent of all sick leave used by civilian employees at the Air National Guard station that year.

The methodology. In conducting the study, we employed two measures of individual job performance. The first, an employee self-appraisal, was embedded within a larger survey questionnaire administered as part of our analysis.¹⁴ We based the self-appraisal instrument on a technique called feedback-based self-appraisal.

⁹Mowday et al., *Employee-Organization Linkages*, pp. 157-166.

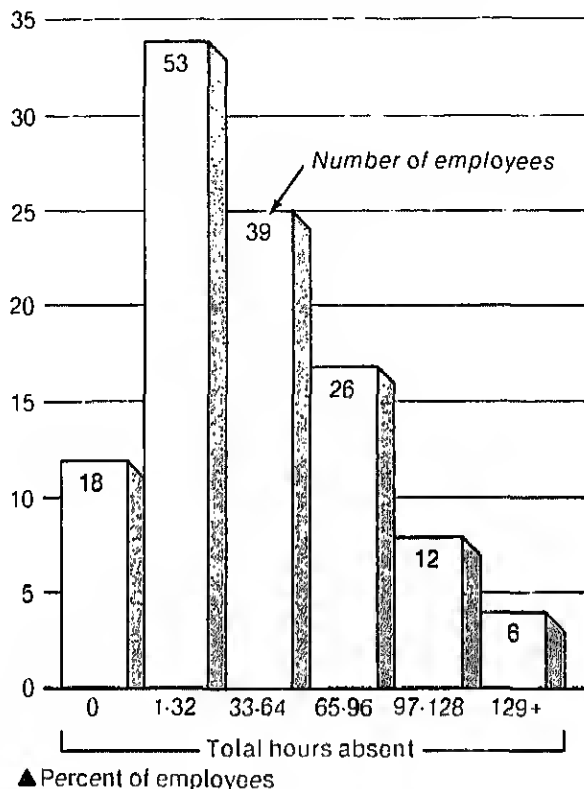
¹⁰*Ibid.*, pp. 164-166.

¹¹*Ibid.*, p. 164.

¹²See, for example, Robert T. Keller, "The Role of Performance and Absenteeism in the Prediction of Turnover," *Academy of Management Journal*, March 1984, pp. 176-183, or John E. Sheridan, "A Catastrophic Model of Employee With-

¹³Garre Johns and Nigel Nicholson, "The Meanings of

**Figure 1. Use of sick leave
by civilian employees at an Air National
Guard station during 1983**



Though comparable to traditional self-appraisals, this technique differs in that it requires employees to base their ratings on feedback they have received from their immediate supervisors. The feedback, which serves as a common frame of reference for both employee and supervisor, may have been formal or informal, written or oral. Researchers have found that feedback-based self-appraisals parallel supervisory evaluations of performance more closely than do conventional self-ratings.¹⁵

Using a scale of 1 (far worse) to 7 (far better), employees in our study compared their performance to

that of others doing similar work. They rated then in five areas: quantity of work, quality of output, problem-solving capacity, and adaptability/flexibility. From each respondent's immediate superior, we obtained performance evaluations that addressed those same five dimensions and, in addition, an overall rating of employee effectiveness. Distribution of supervisory ratings was along a scale ranging from 1 (far below the typical employee) to 7 (far better than the employee).

After gathering the data, we computed the degree of correlation between the sick leave an individual used and the self- and supervisory ratings in each of the five performance dimensions. The possible range of a correlation is from -1.00, a perfect negative relationship, to +1.00, a perfect positive relationship, with 0.00 representing no relationship at all. Logically, one would expect a negative relationship between absenteeism and performance ratings, that is, that higher performance ratings would accompany lower sick-leave usage. Positive correlation would signify that as absence increased, so did performance ratings.

The correlations. What did our computations reveal? Figure 2 displays the correlations between the amount of sick leave used and the self- and supervisory ratings of employees in the sample. In general, the degree of correlation was comparatively small, and, as expected, correlations were negative. In the case of the appraisals, all correlations were negative, but not significant in degree. Correlations between supervisory evaluations and job performance, on the other hand, were significant for two of the six dimensions: efficiency and adaptability-flexibility. Thus, among individuals in the Air National Guard station sample, those who used the most sick leave during the year tended to be poor performers in the view of their supervisors, particularly in these two areas (see Figure 3).

Absence performance studies conducted thus far in the private sector add credibility to our findings. Although only a few researchers to date have investigated correlations between the two variables, their results also indicate that absence correlates significantly and negatively with supervisory performance evaluations.¹⁶ This body of research has important implications for the Greek Air Force's proposed revisions to civil service sick leave policy: the evidence suggests that the panel's recommendations, if adopted, would not only reduce labor

¹⁵Our study of the relationship between absenteeism and performance was part of a larger research project. We informed

sick leave increased, performance ratings decreased.

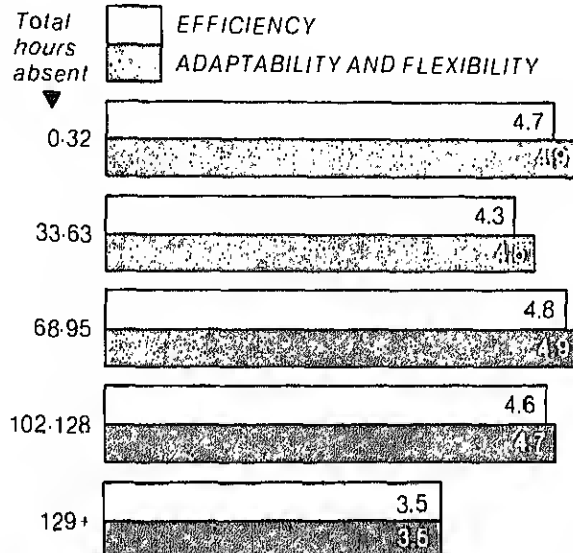
| Performance dimension | Correlation with absenteeism | |
|------------------------------|------------------------------|-------------|
| | Self-appraisal | Supervisory |
| Quantity of output | -0.07 | -0.12 |
| Quality of output | -0.03 | 0.00 |
| Efficiency | -0.05 | -0.15 * |
| Problem-solving capacity | -0.01 | -0.10 |
| Adaptability and flexibility | -0.04 | -0.19 * |

*A statistically significant correlation (confidence rate of at least 95 percent). For the self-appraisals, a positive or negative value of at least 0.23 would have been statistically significant, given the sample size of 71; for the supervisory appraisals, the critical value was 0.15, given the sample size of 153

policy, budget analysts foresee more, not less, sick-leave usage. The Air National Guard study, like related research in the private sector, points to poorer performance among employees who use more sick leave. Consequently, the impact of the revised policy on government operations could be a degradation in organizational effectiveness.

The two key elements of the present policy—unlimited accumulation of sick leave and conversion of unused leave to retirement credits—are complementary. Eliminating the more costly component, retirement credits, removes much of the benefit an individual derives from the remaining provision, thereby depriving the government of a valuable motivational tool. Experience has

The rating scale ranged from 1 (far worse than the typical employee) to 7 (far better than the typical employee).



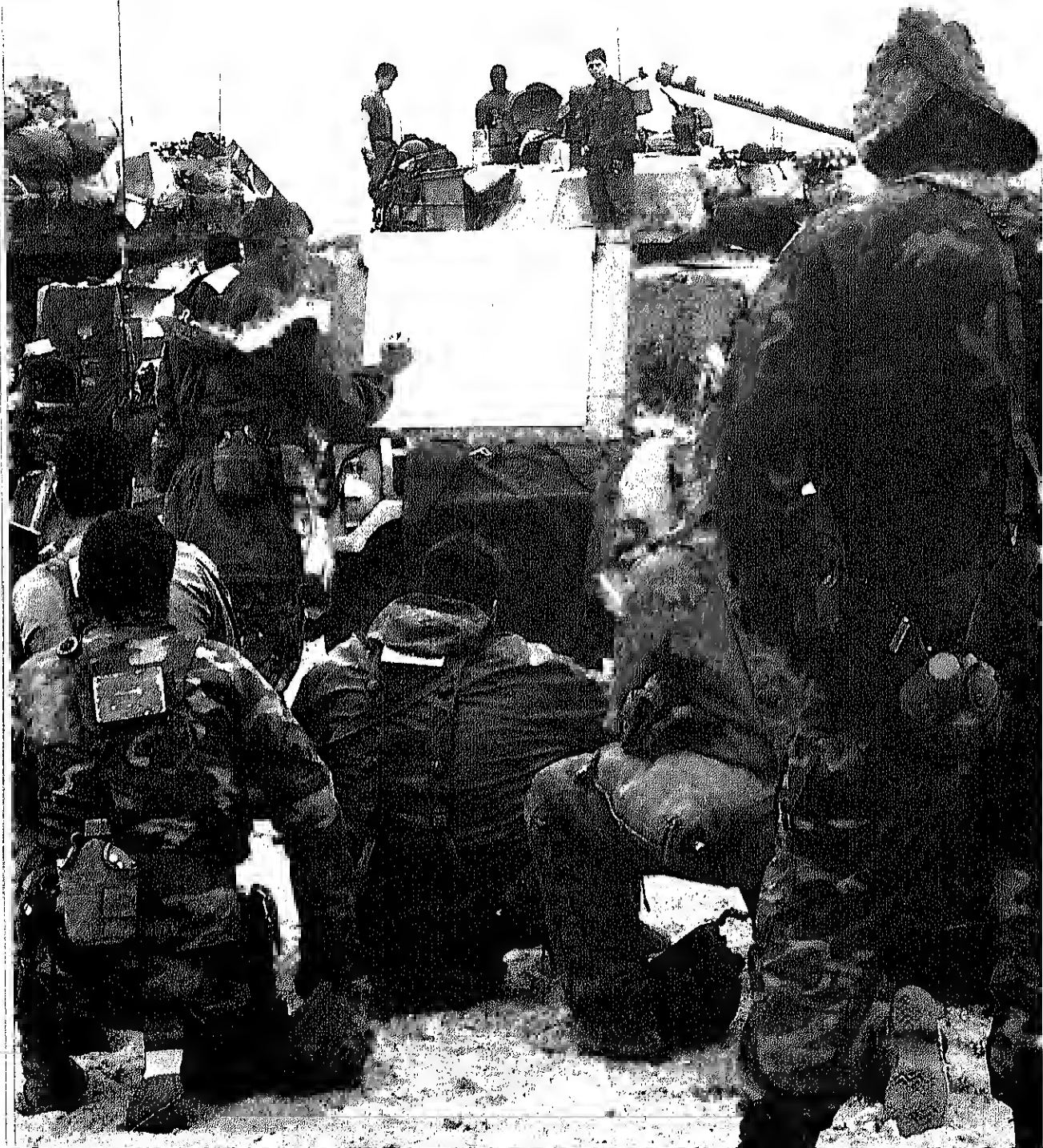
shown that when managers emphasize the benefits of sick-leave accrual to federal workers, sick-leave usage declines and organizational productivity increases.¹⁷

Certainly, the evidence in hand underscores the need for caution and thorough analysis before implementing measures that reduce sick-leave benefits for federal employees. Like their fellow citizens, government workers have a vested interest in trimming the nation's budget deficit. But in our search for solutions, we must take care not to exacerbate the problem. **DMJ**

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¹⁷Marie B. Acton, "RESHAPE: A Strategy for Increasing Productivity," *Defense Management Journal*, First Quarter 1984, p. 40.



Deriving useful lessons from combat simulations

By JACK H. HILLER

Buoyed by the promise of several technological and procedural innovations, Army training officials expect to overcome many of the traditional obstacles to obtaining valid and useful measures of unit performance during combat exercises.

The services have long recognized that the ability to measure the effectiveness of unit combat performance is fundamental to any effort to improve unit training, equipment, personnel, tactical doctrine or organizational systems design.* Without measures of performance effectiveness, officials cannot determine whether policy or procedural changes to the unit structure have helped, hurt, or had no effect. The widely variable conditions of actual and simulated combat, however, together with difficulties inherent in observing and measuring unit performance, have frustrated research undertaken to develop workable systems for measuring unit combat effectiveness.¹

The issue is of particular concern to the Army's National Training Center at Fort Irwin, California, which affords combat and support units a training environment very much like actual combat conditions.

The center is accomplishing its primary goal of providing realistic combat training, but some have charged that it is not effectively using data obtained during training exercises as a basis for Army-wide lessons learned.² What are the impediments to achieving this secondary but nonetheless important objective? What is being done to remove them? This article seeks to answer both questions.

To assess unit combat effectiveness, evaluators have to measure performance within the framework of established doctrine. Unfortunately, the translation of doctrine into performance standards is not a simple, straightforward task. In fact, unit training guides typically avoid precise specification of performance standards for maneuver units and concentrate on task performance procedures instead. The omission of standards or criteria for successful performance is understandable given that training exercises occur in varied terrains, weather conditions, and time frames; also, the exercises feature opposition forces of different sizes, skills, motivation, equipment, and support structures. While the lack of clearly specified mission performance standards to cover such diverse

*My thanks to Jesse Orlansky and Jay Uhlaner, whose suggestions and comments were very helpful to me in preparing this article.

¹See, for example, S.K. Wetzel-Smith and S.R. Mitchell, Collective Training Standards Development: Problem Analysis, Technical Report 86-26 (San Diego, CA: Navy Personnel Research and Development Center, 1986), A12, A140, 257.

²A notable example of such criticism is the General Account-

circumstances is not surprising, it does create a serious measurement problem.

Observers may intuitively feel that certain units are relatively effective or ineffective, but historically the training community has been unable to substantiate these feelings with hard, precise data. This drawback is somewhat analogous to the measurement problem in physics commonly referred to as the Heisenberg Uncertainty Principle. Its three premises are that the process of measurement dynamically affects the object being measured, that the object has many different potential states of existence, and that the object is known only through measurement. Each of these comes into play when one tries to measure unit effectiveness;

- In the case of the first premise, special or accelerated training done to prepare for exercises at the center, as well as action taken because observers are present during exercises, may result in performance and measures of performance that do not represent typical unit capability.

- Instability in unit composition, which results from personnel turbulence and turnover, and the casualties simulated during training exercises are factors that correspond to the second Heisenberg premise.

- Finally, because accurate measurement of unit effectiveness is extremely difficult to obtain in an ordinary home-station environment, the "snapshots" taken at special exercises such as those at the National Training Center in effect provide the best indicators of a unit's performance effectiveness.

These impediments to achieving accurate measurement have frustrated efforts to establish unit effectiveness in any absolute sense. The difficulties involved virtually force a strategy of limiting measurements of a unit's effectiveness to selected critical missions that the unit under review performs in a relatively controlled, standard environment. There are 11 missions typically trained by battalion task forces at the National Training Center; they include movement to contact, hasty attack, deliberate attack during day and night, defense in sector, defense from a battle position, and delay. All are key to designing an effectiveness measurement system that would allow the Army to develop lessons learned. A description of strategies for assessing unit effectiveness when performing these missions follows.

Using combat simulation, officials at the National Training Center are able to train and evaluate different units performing essentially the same set of missions. The

to military experts, for each of the 11 critical mis-

Researchers can determine empirically whether performance conditions are sufficiently stable and sufficiently reliable to generate data that will yield statistically significant relationships. If we eventually find significant relationships between National Training Center performance assessments and predictor variables such as leadership styles and home-station training procedures, then the effort to develop valid effectiveness measures will have succeeded. But if we cannot establish relationships, we may not be able to determine whether the failure reflects an inability to devise valid and reliable measures at the center and the home station or whether it reflects a true lack of relationships.

The following simple example illustrates the concept of keying performance standards to measurement of unit effectiveness—that is, mission outcomes, rather than to procedures. Those standards for the delay mission state that the battalion task force will:

- Block penetration of the enemy for at least A minutes after the ground assault has begun (passing score, 10 hours (high pass)).

- Suffer no more than C casualties (passing score, 1000 (high pass)).

- Inflict at least Y opposition force casualties (1000 score) or Z casualties (high pass).

Using standards patterned after these, analysts can then directly derive unit-performance measures.³

Assume, for the moment, that officials at the center have measured unit performance and, using standards devised for exercises at the center, have determined a unit's effectiveness. In doing so for all 11 missions, the approach generates an unwieldy assortment of unit effectiveness scores. To reduce this volume of numbers, analysts could create an index for use in scoring unit effectiveness in each mission—for instance, they could add together the raw or weighted scores for each standard on each mission.⁴ Where appropriate, reviewers could then combine these indices, weighted as

³The scoring scale of pass, high pass, and fail represents an expansion of the two-point scale currently used in the Training and Evaluation Program. Obviously, further expansion of the scale is possible and would be consistent with the Army Science Board's summer 1985 study of training and evaluation technology, which recommended expansion of measurement scales beyond the dichotomous GO-NO GO. I believe the new percentage ranges for opposition force

In doing research, analysts could use omnibus criterion variables as overall measures of a unit's performance effectiveness or capability. They could, for example, determine the reliability of measures of a unit's general characteristics—command climate, leadership styles, or level of personnel turbulence and fill—as predictors of unit performance effectiveness. Conversely, to obtain predictors of unit performance effectiveness that reflect specific unit characteristics—the age of its weapons, levels of personnel fill in selected job specialties, and amount of emphasis placed on training particular tactical skills—analysts would use as the criterion an index based only on the relevant mission or mission standard.

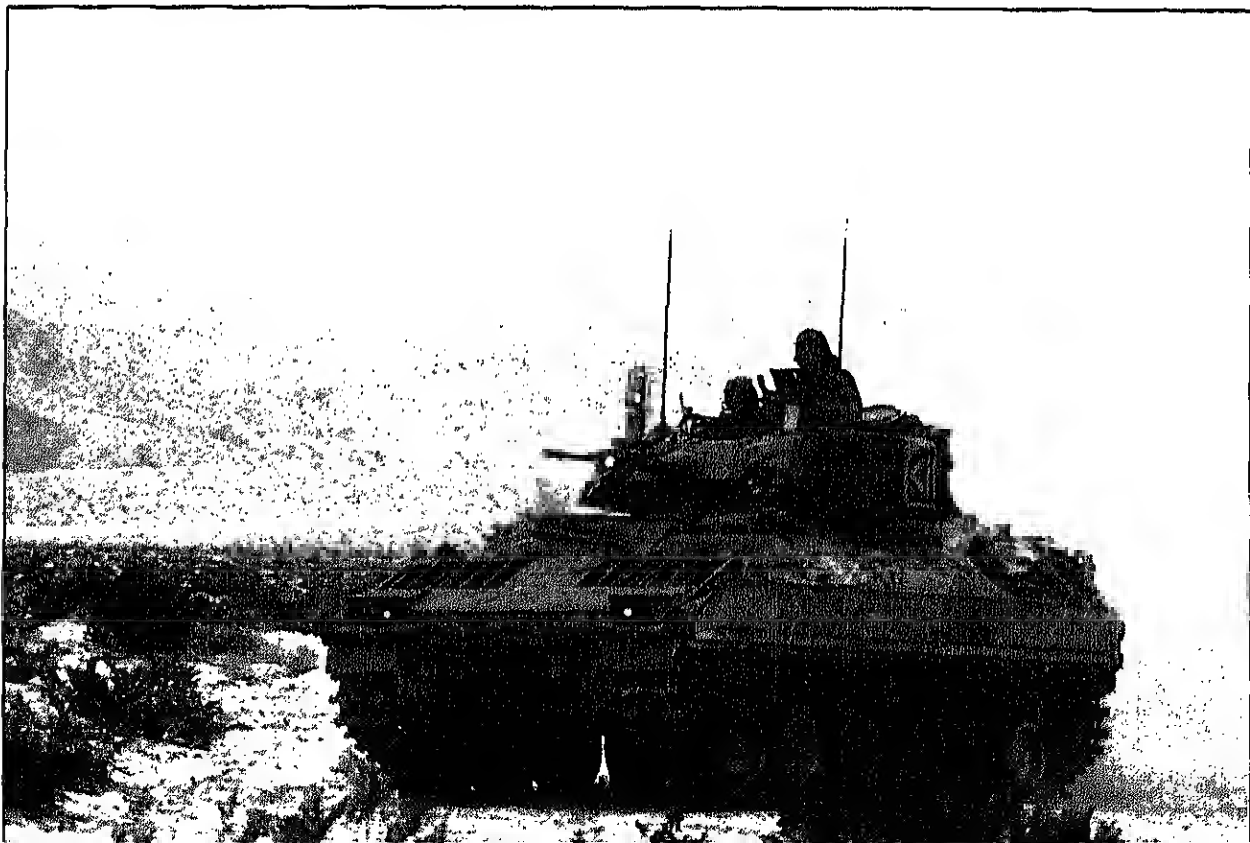
The principal purpose of the National Training Center is to train soldiers for combat, not to serve as a test-bed. In essence, the center provides Army units the experience they would likely gain from their first 10 "shot at's," or encounters with the enemy, during actual combat. Work-

ysts can identify patterns of strength or weakness in training, personnel and organization, tactics and operations, equipment, and logistics. Initially, trainers at the center use these data in after-action reviews—Socratic discussions held immediately after engagements and widely credited as the best approach for learning from experience. The data are also incorporated into take-home packages to help units improve home-station training programs. In addition, analysts sometimes collect a limited amount of data on specific issues and aspects of a mission.

Because collection does not take place in a controlled, test-like environment, the data often contain certain errors and deficiencies that limit their application to other research efforts. Missing or incomplete data is a major problem, particularly in the case of the Multiple Integrated Laser Engagement System, which simulates weapons firing by means of beams and sensors rather

Against a rugged and hilly California landscape, students at the National Training Center power their M-2

Bredley Fighting Vehicle toward a showdown with enemy forces.



battlefield, laser beams do not always penetrate the smoke and dust of a simulated battlefield; consequently, the fidelity of direct-fire weapons simulation and the validity of the data are degraded.⁵

Also, because indirect fire and air-defense artillery are not yet instrumented, scorers have to resort to old-fashioned guesswork in evaluating the battlefield effects of these weapons. In addition, some weapons systems (and most individual soldiers) are not instrumented, further limiting the value of the data. Data loss once again becomes a problem when terrain features block vehicle radio transmissions relating to troop positions and firing activity.

Another restriction on the usefulness of data collected at the center is the inability of training observers to routinely collect information on specific issues and factors affecting unit performance. These factors include leadership styles, sleep patterns of soldiers and leaders, visibility at specific junctures in the exercise, and radio communication patterns.

Trainer interventions skew the data too. The individuals who stage and manage exercises in order to create good training scenarios are actively influencing battle outcomes. For instance, if certain actions or maneuvers become so hogged down that they consume an inordinate amount of training time, training officials may direct the opposition forces to change their behavior. Similarly, they may invoke a nominal enemy in order to alter the behavior of friendly forces. Or, trainers may simply order the friendly forces to stimulate action.

Perhaps trainers have the greatest impact during simulated action when they "revive" and "kill" leaders and soldiers in order to maximize the value of the training. Trainers can resurrect a dead junior officer six or seven times during a battle in order to give him additional opportunities to learn and gain battlefield experience. Clearly, trainer intervention affects battle outcome and complicates data interpretation. This is not to say that trainers should refrain from actively controlling exercises to achieve maximum learning opportunities at the center. It should, however, serve as a caution against broadly and simplistically applying battle outcome data obtained from these exercises.

To avoid making invalid, subjective conclusions about the effectiveness of units engaged in simulated combat, analysts must use performance criterion measures

beyond the data generation and collection discussed above. Battle outcome measures do translate into explanations of performance. Data pertaining to the actual task performance of unit leaders, and equipment are more measures that are relatively easy to interpret.

Although the center does not now collect data because of the burden that task would impose, a technological innovation may soon change that. In 1985, using funds provided by the Technology Agency of the U.S. Army Training and Doctrine Command, the Army Research Institute developed an electronic clipboard.⁶ It is a flat, hand-held device that presents checklists (a menu) and records the scores a unit earns on each list item. Trainers enter scores using a touch screen and can feed the stored data directly into a computer when convenient. The electronic clipboard enables trainers and observers in the field to collect data on general and specific topics, which in turn greatly aid service officials in formulating lessons learned.

When analysts use task performance in evaluating the accuracy of the resulting estimates of unit effectiveness depends upon the observers' ability to see a simulated battlefield. Given the limited number of observers available and the difficulty of seeing all units and soldiers covered, concealed, or cloaked in smoke, task-based measures are often unreliable. Furthermore, variations in performance affect how units act and how closely their performance conforms to tactical doctrine as described in the Training and Evaluation Program.

Likewise, uncontrolled or random variations in conditions under which soldiers perform the same task may significantly affect battle outcome measures. These variations may stem from luck, the availability of intelligence, the success of opposition forces in exploiting an uncharacteristically weak point, or atypical weather. Consequently, it is desirable to allow military analysts to amend objective estimates of unit performance in light of battlefield conditions.

Current plans call for using experts—unit commanders—to rate unit effectiveness on various operating systems such as fire support, intelligence, defense, mobility and countermobility, air and ground control as well as on nuclear, biological

an overall effectiveness rating and provide explanations for any scores outside a neutral or mid-range value.

The commanders will use two frames of reference. First, drawing on personal experience, they will rate units on a relative scale. For example, the high end of the rating scale might be, "one of the best performances," and the low end, "one of the worst performances." Because any given expert's experience may relate to generally very good or very poor units, the raters will use a second frame of reference pegged to combat proficiency. The high end of that scale might be, "completely effective performance," and the low end, "completely ineffective."

In making these assessments, the expert raters will review the mission orders, the digital data tapes fed through the computer system that displays vehicle positions and firing events, the synchronized radio-net audio tapes, map overlays, and documented comments from the National Training Center staff that indicate any special conditions. Researchers at the center will use averaging to reconcile differences in the experts' ratings. Where ratings are extremely discrepant, researchers will look to the experts' narrative comments for insights into how best to interpret the data. Clearly, the use of experienced battlefield commanders to observe and judge recorded exercises at the center promises to alleviate some of the data collection and data interpretation deficiencies inherent in a strictly mechanical performance measurement system.

Although the realistic combat simulation achieved at the National Training Center facilitates effective unit training, it offers only limited opportunities for acquiring high-fidelity measures of unit performance, as we have discussed above. Fortunately, a new combat simulation system now being developed by the Defense Advanced Research Projects Agency and the Army will make possible the kind of precise measurement not attainable in actual field exercises. Moreover, it will do so without any intrusion from data collectors.

As its name suggests, Simulation Networking or SIMNET, is an integrated network linking together various battlefield weapons systems simulators. Eventually, the network may comprise hundreds of simulators for all major weapon systems. This will enable trainers to conduct force-on-force exercises on a combined-arms, battalion task force scale (as is possible at the National Training Center) or larger.

Each simulator in the network will have a video-display screen that realistically depicts the battlefield terrain as well as any systems and vehicles in the environment.

Realistic sound effects and vibrations will add to the fidelity of the simulation.

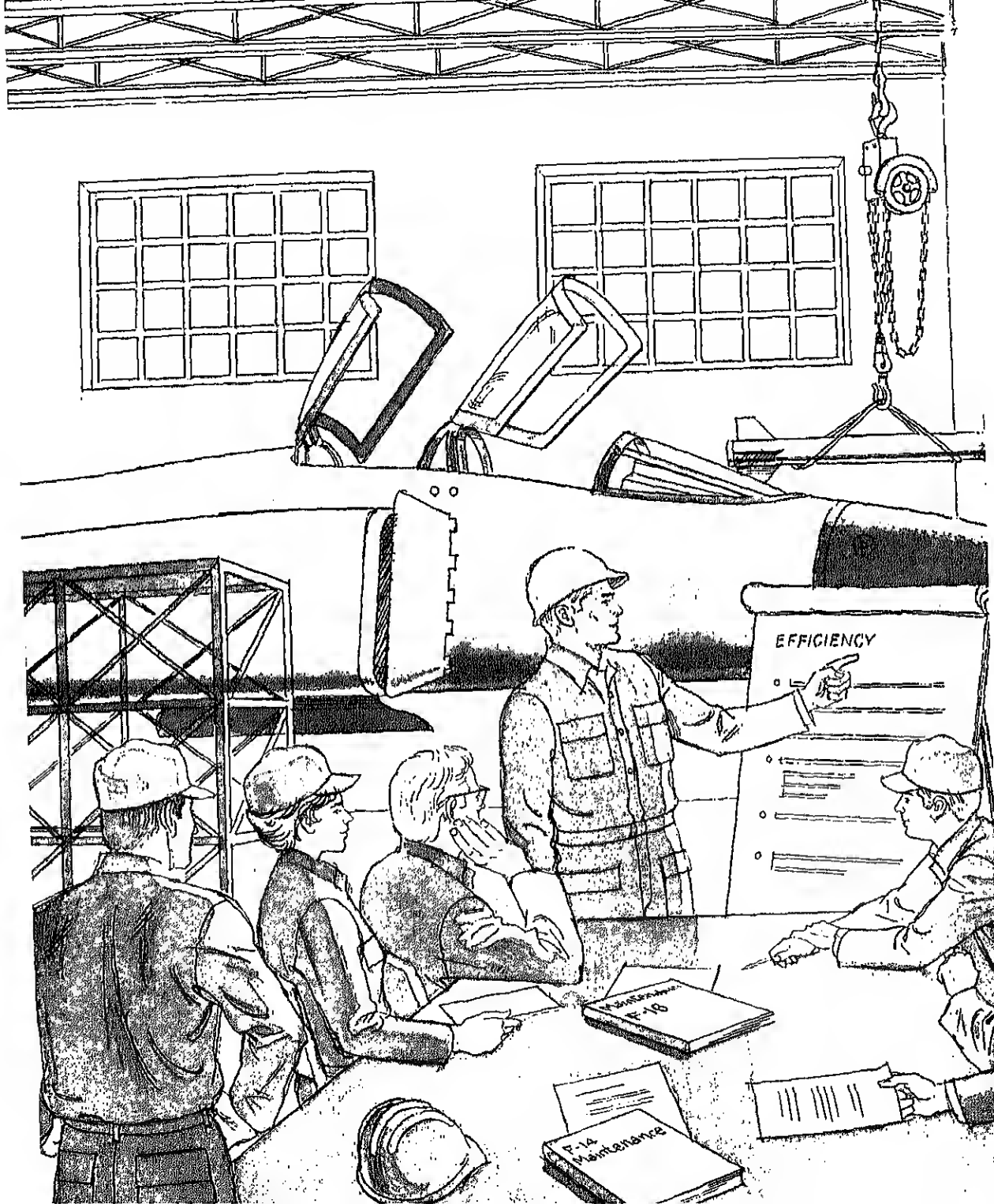
SIMNET will also record exercises in their entirety, thereby enabling trainers and researchers to replay each simulated battle and systematically analyze the data it generated. By incorporating mission scenarios similar to those at the training center, training officials expect to use the Simulation Networking in tandem with the performance measurement system that the Army Research Institute and the Combined Arms Training Activity are developing for the center.

The great potential of SIMNET for generating high-fidelity data increases the feasibility of conducting research on the new measurement performance system itself. For example, SIMNET will reveal the degree to which observations and judgments of military experts are consistent with the systematically calculated assessments that analysts will make using the objectively scored performance and mission outcomes. Analysts will also be able to determine the degree of consistency for objective and behavioral performance measures and for overall ratings of unit performance effectiveness.

The National Training Center can produce data that describe the performance of units, their leaders, and their equipment during simulated combat missions. Together, data from the center and from the SIMNET technology promise to provide new insights into the interactive performance of complex weapons systems typically used by units to perform various critical missions.

Although data currently logged at the center have limitations, recent initiatives to combine the objective data produced by the Multiple Integrated Laser Engagement System and position-locating electronic equipment with data provided by trainers, observers, and battlefield experts should help the Army increase its warfighting capability. While analysts and tacticians must take care not to overgeneralize when applying data gleaned from exercises to actual combat, such data are nonetheless central to formulating valuable, insightful, and instructive Army lessons learned. **DMJ**

JACK H. HILLER is director of the training research laboratory at the U.S. Army Research Institute, Alexandria, Virginia. As chief of the institute's field unit in Monterey, California, Dr. Hiller was heavily involved in the development of unit-performance measurement and unit-training management systems. He holds a bachelor's degree in psychology and a master's in experimental psychology.



Putting a premium on productivity in DoD

By CHAPMAN B. COX

Exhortations to work harder and smarter will not by themselves boost productivity. Employees need a work environment conducive to translating rhetoric into reality, and that is the goal of DoD's productivity program.

Declining productivity growth trends in the United States have troubled our national leaders for the past decade. These trends signal declines in living standards as well as the loss of market shares and jobs to overseas competitors. They are of particular importance to those of us in the Department of Defense because they threaten the nation's defense capability in subtle ways. That capability relies as much on the vitality of our national industrial infrastructure as on the ability of the economy to support defense expenditures.

What are we doing to counter the threat that such trends pose? A wide range of initiatives is in place, with particular emphasis on those that motivate the DoD work force to maximize output. Many programs are sufficiently mature to allow us to report on the results in terms readily understandable to all: dollars and cents.*

The challenge

Within the DoD establishment, officials realize that continued demands for improved levels of defense capability will come to depend increasingly on more efficient use of defense dollars and personnel. Tighter budgets

inevitably impose constraints, and we will have to improve our defense capability with the limited resources available. Our job is to structure management rules and incentives so that we can achieve this objective.

The administration has issued all of us an additional challenge. In February 1986, President Ronald Reagan signed Executive Order 12552, "Productivity Improvement in the Federal Government," which directed that federal agencies attain a 20-percent productivity improvement in selected functions by 1992. The Department of Defense is well-positioned to take up the president's challenge. Our managers have long been leaders in developing tools, methods, and strategies to improve the way DoD does business.

In response to the executive order, Secretary of Defense Caspar W. Weinberger and his entire senior management team, including all the service secretaries, the service chiefs, and the chairman of the joint chiefs of staff, promulgated a statement of Department of Defense productivity goals. This statement integrates the objectives of all of the department's ongoing productivity programs.

In particular, it highlights the aggressive productivity improvement process which DoD already has in place. That process comprises a large number of diverse initiatives. The initiatives all share a common purpose, though, which is to help the department reach just two basic goals:

*I gratefully acknowledge the assistance of Karen Cleary Alderman, director of productivity and civilian requirements in the office of the assistant secretary of defense for personnel.

will guarantee the fulfillment of basic national security objectives.

- To ensure that the Department of Defense always attains the highest possible level of defense capability and readiness through the most efficient use of funds provided by the American taxpayer.

In order to achieve these goals, defense managers must adhere to an ambitious agenda also set forth in the statement. Specifically, they must heighten awareness of the productivity enhancement process, communicate top management's commitment to it, and recognize and reward employees who contribute to productivity improvement. In addition, DoD managers have to incorporate productivity goals and incentives in the planning, programming, and budgeting process; maintain quality of work life and morale; minimize adverse impacts from productivity improvements on the individual; and provide DoD employees with training, tools, equipment, and efficient organizational structures. Finally, the department's managers have the responsibility to encourage a creative and innovative spirit in the work force, seek a competitive advantage and use the leanest resource mix possible, delegate authority commensurate with responsibilities, and challenge every individual to contribute.

Last summer, Secretary Weinberger sent a copy of the statement to every flag and general officer and every senior executive in the Department of Defense. He asked these leaders to communicate and encourage a creative and innovative spirit of excellence in day-to-day operations and urged their personal commitment and active contribution to achieving the productivity goals.

In response to the president's executive order, the secretary of defense also recently transmitted his management improvement plan to the Office of Management and Budget. The plan targets 15 functions that relate to the president's productivity initiative. Drawn from the Army, Navy, Air Force, Marine Corps, and several defense agencies, these functions involve more than a quarter of a million military and civilian personnel; annual budget costs for the functions exceed \$11 billion dollars. Among the diverse missions affected are supply, military personnel management, recruiting, pay, accounting and finance, facilities maintenance, and large-scale logistics functions, including depot-level ship, aircraft, and weapons repair.

This management improvement plan reflects the department's initial attempt to fit planned initiatives into prescribed reporting requirements. The requirements

the current reporting process, and we a broader set of initiatives in order to re quality and productivity efforts and to sl as widely as possible. We want to ensur defense community understands that I committed to enhancing mission cap. improvements in quality and productivit

The tools

Exhorting a community to work hard however, is not enough. The leadership environment and provide tools to facilit senior management in the Defense Depa that in several key areas. Specifically, v awareness and providing opportunities force to participate in productivity enhance resources for high-payoff capital investm ing continuous review of essential custom seeking the most efficient methods to me

Awareness and work force participati stress the need to be as concerned about people as we are about managing our lended, motivated, and dedicated people the critical difference in our nation's defi To maintain that edge, we must recruit, tain highly qualified, motivated civilian a sonnel who are technically proficient, r and innovative. We need to work with ou to them, and provide quality working ar tions. In other words, part of our producti to make working for DoD a challenge, n

The department supports motivation such as quality circles, productivity ga model installations program to waive reg native personnel systems, and statistical applications. Our military and civilian v much to offer in improving our operations have an obligation to provide incentives i ties to encourage such contributions. All features are part of the president's execut

Our reliance on people recoups major c gestion and incentive awards programs, fo realize cost avoidances of \$1.6 billion from 1988. The Secretary of Defense Producti Award program recognizes particularl examples of work force initiatives and potential and successes of our people.

of each of these individuals and groups resulted in hard, verifiable savings of at least \$1 million during just the first 12 months of operation. Combined, the initiatives of these 60 men and women yielded total first-year savings of nearly \$200 million. This was the largest group of honorees and the largest dollar savings since the Department of Defense started this recognition program in 1983. Total verifiable first-year savings since the beginning of the program amount to approximately half a billion dollars.

Some examples of these initiatives will illustrate the benefits realized. They will also demonstrate that by approaching almost any job with an open mind and a desire to do it smarter, we can reap huge dividends. For instance:

- A Marine Corps civilian employee based at Camp LeJeune, North Carolina, noticed that the activity was buying a complete set of repair manuals for each commercial automobile purchased. Since the manuals are used for reference in automotive shops, where the mechanics share them, he recommended a reduction in the number of manuals purchased. By applying his suggestion to all commercial vehicle purchases, the department has saved \$1.2 million annually.

- Another civilian worker at the Army Tank Automotive Command in Warren, Michigan, suspected that multi-unit packaging of T-142 track shoes significantly

just cited? Quality circles, productivity gainsharing, and statistical process control are all specific employee involvement techniques used within the Defense Department. A quality circle is a voluntary team of 8-10 individuals from a work area who receive training in problem-solving techniques. The circle meets one hour each week to develop solutions to problems in the group's work area. More than 2,100 quality circles are now operating at DoD activities worldwide. Various quality circles have revised repair procedures, improved workplace layouts, eliminated wasted time, and improved material storage and usage.

Consider the efforts of the "mechanics court" quality circle at Warner Robins Air Force Base, Georgia. That team identified time lost as a result of standing in line at a tool crib to check out expendable items. Mechanics were averaging one 30-minute trip per week to the tool crib for expendable items, which were out of stock almost half the time. The circle suggested placing a status board at the tool crib site and listing out-of-stock items on it; mechanics could then tell at a glance if needed items were immediately available. This simple idea resulted in a cost avoidance of half a million dollars.

Another technique, productivity gainsharing experiments, allows employees to share financially in savings from increased productivity. The General Accounting Office recently recognized DoD as a leader in applying

*Specifically, we are fostering awareness
and providing opportunities for the work force
to participate in productivity enhancement, allocating resources
for high-payoff capital investment, orchestrating continuous review
of essential customer services, and seeking the most efficient
methods to meet those needs.*

hindered inventory and issuance control. His recommendation to package the track shoes in single units resulted in savings of almost \$20 million per annum.

- At the Naval Air Rework Facility in San Diego, California, a civil servant noted a lack of integration among tracking systems used to identify and categorize repairable items shared or common between systems.

gainsharing in the federal sector and endorsed this participative technique as a positive incentive to get better value from physical and mental resources (see the GAO report entitled *Gainsharing: DoD Efforts Highlight an Effective Tool for Enhancing Federal Productivity*, GAO/GGD-86-143BR, September 1986, summarized on p. 42 of this issue of the *DMJ*). Both the military services

Under these experiments, employee work groups that exceed preestablished goals can receive up to 50 percent of the savings realized. In October 1986, for instance, the Defense Logistics Agency's Defense Depot Tracy, located in California, set up a gainsharing program for its bin, pack, and storage functions. First, depot personnel reviewed and tightened job standards and devised quality standards. Then, working together through an advisory committee, management, workers, and unions all agreed on measures to ensure worker and management understanding and support. During the first quarter of fiscal year 1987, the 233-person function exceeded its standard by more than 20 percent, saving the function \$164,000, of which more than \$80,000 went into the workers' pockets.

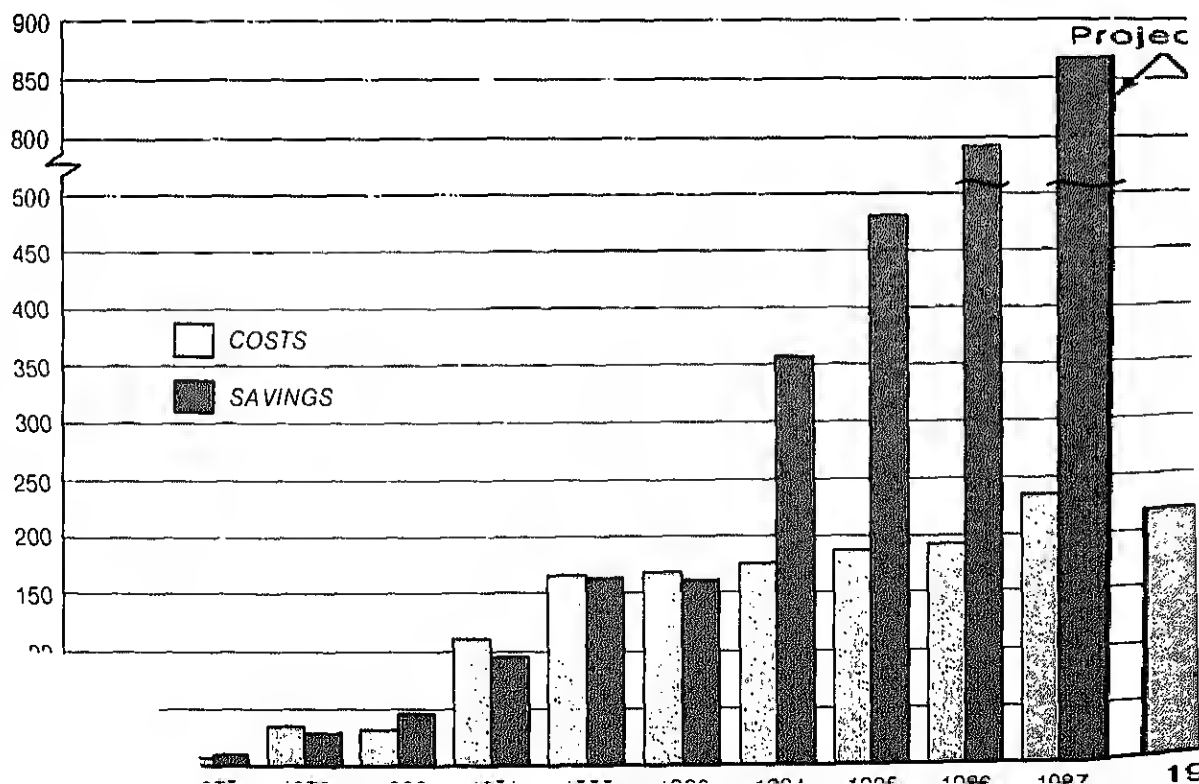
Statistical process control, sometimes referred to as total quality management, also involves employees

techniques to improve communication by identifying process control improvements, which can in turn reliability and quality and thus reduce down time. The emphasis is on doing work right the first time, building quality in, not inspecting it in.

North Island Naval Air Rework Facility, for example, recently turned to total quality management to serve its customer, the U.S. Navy. The facility repairs F/A-18 aircraft, H-46 helicopters, and carrier arresting gear for aircraft carriers. Building on its existing certification program, quality circles, employee suggestion programs, and production management, North Island officials introduced statistical process control to provide feedback information on the shop floor.

The results have been dramatic. The defect rate in the plating and grinding function went from 70 percent to less than 10 percent, and the relationship between

Annual cost-benefit trends for all productivity-enhancing capital investment programs, fiscal years 1977-1988



recting process problems that led to the errors. More and more, the facility is integrating quality assurance personnel on the shop floor to enhance the rework process before defects occur.

Productivity-enhancing capital investments. Selective investment in technology can improve methods of operation, increase individual output, and achieve a higher level of productivity throughout the department. DoD's productivity-enhancing capital investment program provides funds for both quick-return and long-range, high-payoff investment initiatives. Investments of \$874 million from 1977 through 1986 are expected to yield average lifetime savings of approximately \$15 for each \$1 invested (see figure). In fiscal years 1987 and 1988, the Defense Department has earmarked \$239 million and \$220 million, respectively, for productivity-enhancing capital investments.

A typical example of such an investment is the recent purchase of an engine analyzer by the U.S. Air Force. This device allowed a military transportation squadron to diagnose vehicle malfunctions, improve engine tuneups, increase gas mileage, and reduce the normal cost of repair parts by 25 percent. The \$11,000 purchase paid for itself in the first month of use.

Efficiency reviews. A prime manpower management initiative is the efficiency review program. It uses industrial engineering techniques to improve work methods and achieve better internal allocation of personnel. Resources released by this process are then available to meet increasing workloads elsewhere. During 1985, DoD reviewed 112,000 manpower spaces and was able to reallocate 843 of them. Documented dollar savings as a result of the program totaled almost \$32 million for 1985. Efficiency reviews in 1986 covered more than 370,000 manpower spaces, and an additional 200,000 spaces are due for review in 1987.

DoD managers have successfully used efficiency reviews to improve cost, quality, and timeliness of operations and to assure proper allocation of resources. One example is a recently completed efficiency review of the technical support function at the Marine Corps Logistics Base in Albany, Georgia. By consolidating similar functions, restructuring the organization, establishing career ladders, balancing the personnel staff according to workload, and reducing supervisory layering, the Marines were able to save more than \$1.5 million, which they applied within the command to meet other requirements.

DoD task force on productivity in support operations.

improve productivity in support operations. The objective of the task force was to develop strategy and plans for accelerating and improving the already active productivity process within DoD in order to increase mission capability.

The group recommended three basic actions: the department should issue a strong productivity goals statement; it should use existing management structures to create interlocking productivity and quality teams capable of taking swift action in sharing successes and identifying and removing impediments; and these productivity and quality teams should consider, as an initial action plan, 20 specific items which would encourage work force initiatives, actively support line managers' initiatives, and address specific pervasive problems. As discussed earlier, the productivity goals statement appeared last year, and in February 1987, the secretary of defense complemented that statement with a call to the service secretaries to facilitate the productivity improvement process by initiating the productivity and quality team concept.

As we identify more of the factors that hamper management effectiveness and then take action to remove them or minimize their effect, we will be able to create the single most important condition for improving defense productivity—getting our people to innovate and improve the ways in which they do their work. We are convinced that such an environment will be the greatest source of productivity improvement as well as personal satisfaction within the Department of Defense community.

Productivity and quality are everybody's job and a priority for meeting our mission requirements. In fiscally uncertain times, our efforts to improve defense management and use defense resources more efficiently are especially important. We must seize every opportunity available to us to stretch the taxpayers' defense dollars so that each one buys as much defense as possible. **DMJ**

CHAPMAN B. COX is the assistant secretary of defense for force management and personnel. Prior to his appointment to that position in 1985, he was the Defense Department's general counsel and, earlier, was an assistant secretary of the Navy. Before joining DoD in 1981, Mr. Cox practiced law with the firm of Sherman & Howard in Denver, Colorado. He holds a bachelor's degree from the University of Southern California and a

Proving a discrimination complaint

By STEPHEN A. KLATSKY

Mr. Klatsky is the chief of personnel law and litigation, Office of Command Counsel, at the Army Materiel Command, Alexandria, Virginia.

An unsuccessful job applicant charges that you, the selecting official, have discriminated against him or her. What happens next? What will the complainant have to do in order to prove his or her case? More importantly, what steps should you take to ensure that your personnel actions fully support merit principles?

To be able to answer such questions, managers and supervisors responsible for hiring, promoting, and disciplining employees need to familiarize themselves with the adjudicatory procedure for cases of alleged discrimination. The purpose of the three-stage process, used by both administrative tribunals and the courts, is to determine whether the challenged personnel action indeed derived from merit principles.

By statute, any personnel action directly affecting a federal worker's employment status must be based on merit and substance. The law protects against discrimination stemming from considerations of "age, sex, color, race, religion, handicap, or national origin." The burden of proof in all cases of discrimination rests ultimately with the complainant, whose failure to satisfy the requirement will defeat the allegation.

An inherent problem in equal employment opportunity cases is that the finder of facts—be it an investigator or an adjudicating officer—must evaluate the case in the absence

of evidence that might reflect the predispositions of the alleged discriminating official. Such evidence is usually lacking because most acts of discrimination are neither performed in public nor publicly proclaimed. However, a manager's motive, no matter how innocent in origin, can result in a finding of discrimination if the action itself constitutes or leads to disparate treatment. In passing the Civil Rights Act of 1964, Congress focused on the results of an action without regard to intent.

The Supreme Court established burden-of-proof procedures in the 1973 case of *McDonnell Douglas Corporation vs. Green*. The three-tier process provides a framework for analyzing and interpreting the totality of facts and circumstances pertaining to a case. It fills a legal void created by the 1964 civil rights legislation, which did not outline an approach or set up a system for determining whether an act of discrimination has occurred.

In the *McDonnell* case, Mr. Green, a black mechanic recently laid off by the company, had protested allegedly discriminatory employment practices by participating in a "stall-in" that blocked roads leading to the McDonnell Douglas plant. He was arrested and pleaded guilty to obstructing traffic. Later, the company advertised positions for which Mr. Green applied, but because of his newly

acquired criminal record, he was not selected. The mechanic charged that the company was in violation of the Civil Rights Act by discriminating against him for the stall-in protest, which was a protected activity under the Civil Rights Act.

Before remanding the case to the lower federal court, the Supreme Court outlined a burden-of-proof process that involves the trier of fact, the administrative bodies, federal and state courts, and the administrative tribunals. The Equal Employment Opportunity Commission now follows this process in employment discrimination cases.

During the first stage, the complainant must establish *prima facie* evidence of discrimination. This is evidence and circumstances surrounding the action are sufficient to raise a presumption of discrimination. In discrimination cases, the complainant must show that he or she was qualified for the position, was selected for the position, and was not selected to fill the position. This is the *prima facie* evidence. If the complainant can establish this, the burden shifts to the employer to prove that the selection was based on merit principles. This is the *burden of proof*. If the employer can prove this, the burden shifts back to the complainant to prove that the selection was based on merit principles. This is the *burden of persuasion*. If the complainant can prove this, the burden shifts back to the employer to prove that the selection was based on merit principles. This is the *burden of proof*.

Failure to satisfy this burden is usually due to one of two reasons: the complainant was incomplete or the employer was not able to demonstrate merit principles. In a recent example, a mail carrier at the Postal Service had been charged with performance problems.

val was an instance of discrimination against left-handers. The court, however, ruled that left-handedness is not a protected category, and thus the complainant was unable to establish a presumption of discrimination.

An inability to meet the *prima facie* burden will inevitably lead to a finding of no discrimination. But the existence of a *prima facie* case is not in and of itself adequate to establish that discrimination has indeed occurred. It simply means that the complainant has shown that the facts and circumstances were such that discrimination may have occurred.

In the second stage of the process, management takes the stand and attempts to rebut the presumption of discrimination. Testimony from the alleged discriminating officials is the best method for doing so. Documentary evidence, if available, can help bolster management's position.

In nonselection cases, management frequently introduces evidence the personnel form on which the selecting official has indicated his or her choice of applicants. This form, which may vary slightly from agency to agency, contains a block in which the official must give a rationale for the selection. Properly prepared, the statement will offer substantive reasons which relate to the formal position description and the evaluation criteria outlined in the vacancy announcement.

When completing this portion of the form, officials should avoid broad statements such as, "This individual was the best candidate for the position." In fact, at some agencies, including the Army Materiel Command, the personnel office will return the form to the selecting official if the reasons given are not sufficiently substantive and detailed.

Management can also refute discrimination charges by showing that an action resulted from mandatory

compliance with personnel administration policies and regulations. For example, a selectee may have had overseas reemployment rights, veteran preference, or preferred status under the agency's priority placement program. Or the personnel action in question may have been a lateral reassignment, which does not require competition.

In recent years, management has increasingly used statistics to rebut *prima facie* cases. The Supreme Court has stated that figures reflecting a racially balanced work force or work unit are not only permissible, but vital evidence of nondiscriminatory motive. Additionally, in nonselection cases, management can introduce the hiring official's applicant-selection record, which may reflect a history of nondiscriminatory actions or adherence to the organization's hiring practices as they pertain to a particular office, occupational series, or specific group such as women, Hispanics, or those over the age of 40. Whatever the evidence offered, management need show only that it selected from among applicants deemed best-qualified, not that it selected the very best candidate.

After management has articulated its position, the third and final stage in the process begins. The complainant must now show that the stated reasons for selection are a pretext for concealing the discriminatory nature of the act. Proving such pretext is generally as difficult as establishing a *prima facie* case is easy. The complainant has to establish that management's reasons are inconsistent with the position description, the job-evaluation criteria, or Office of Personnel Management classification standards.

Alternatively, the individual may show that the nonselection constituted disparate treatment, that is, that management applied the stated crite-

ria only to him or her and not to other candidates. This would have been the case in *McDonnell vs. Green*, for instance, if the complainant had shown that the company hired white applicants who had criminal records or who had been convicted of unlawful conduct in connection with the staff-in protest.

In a recent case at the Army Materiel Command, officials were unable to rebut a worker's claim that the reasons for his nonselection were indeed pretextual. Management contended that the complainant, a black male, lacked experience in a certain procurement area. However, the employee countered that neither the position description nor the testimony of the former incumbent supported the need for experience in that particular procurement field. While the adjudicating official did not nullify the hiring action, he did grant the complainant priority-consideration status for the next appropriate vacancy.

Another nonselection case involving the mother of two small children had the same outcome. During the job interview, the woman indicated a reluctance to accept temporary duty assignments requiring overnight travel, a response that greatly reduced her chances for the job. Her attorney successfully argued that use of this criterion was essentially a pretext for nonselection because the interviewer had not posed a similar question to male candidates.

In addition to serving as a fair and effective mechanism for determining the propriety of a personnel action, the three-stage burden-of-proof process reminds management that it has a responsibility to base all personnel decisions on merit principles. The rigors of the process put managers on notice that they must be able to clearly enumerate substantive reasons for hiring, promoting, or disciplining an individual.

Gainsharing: DoD efforts highlight an effective tool for enhancing federal productivity

U.S. General Accounting Office, Washington, DC (GAO/GGD-86-143BR, September 1986). Request copies of GAO reports from: U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877.

From October 1985 through February 1986, the General Accounting Office reviewed DoD's gainsharing programs—work-incentive systems under which employees and the organization share savings and residual benefits realized through workers' efforts to increase productivity. During those five months, GAO analysts surveyed 34 DoD gainsharing program managers and examined relevant data and documents. They also analyzed similar private-sector incentive systems in order to establish criteria against which to measure DoD's programs and to identify elements necessary for the success of gainsharing efforts.

For more than a decade, many private-sector firms have increased productivity and improved their competitive standing through gainsharing. In a 1981 review of such efforts, the GAO found that companies with gainsharing programs enjoyed, on average, a 17-percent increase in productivity. Firms which had practiced gainsharing for more than five years experienced even larger increases. Additionally, four out of five companies surveyed in 1981 reported improved labor-management relations.

such companies had gainsharing plans.

DoD organizations began experimenting with gainsharing in the late 1970s. As of February 1986, 11 trial programs had concluded, two had terminated before completion, five were ongoing, and three were in the proposal stage. In examining the five ongoing and 13 earlier efforts, GAO analysts discovered that the number of employees included in bonus-sharing programs varied from a low of 17 to a high of 1,000 and that these employees were in career fields ranging from data transcribers to mechanics. The basis for all the programs, however, was individual or small-group measurement standards, and none featured employee participation in program design or decision-making, a component common to private-sector systems.

Commenting on these seven completed programs that it had sponsored, the Army stated that the gainsharing initiatives had not only boosted productivity, but also led to a reduction in turnover and sick-leave usage. The Navy Personnel Research and Development Center, which sponsored four of the six Navy efforts, reported improvements in labor-accounting accuracy, staffing-level adjustments, and operational efficiency.

The DoD gainsharing programs on which the study team was able to obtain data generated cost savings

the machine shop at Pea Naval Shipyard. Others yielded significant savings included overhaul shop at Anniston Depot, Alabama (\$752,000), machine shop at Philadelphia Shipyard (\$500,000), and transcription center at the Missile Command, Redstone Alabama (\$403,000).

Several activities noted benefits as well. The Naval Works Center in San Diego the elimination of work backlog, an 80-percent drop in time lost on-the-job injuries, and a 50-percent decrease in overtime. Through gainsharing programs, the Missile Command eliminated work logs too and reduced turnover and overtime by 80 percent and 50 percent, respectively. At the Sacramento Army Depot, California, gainsharing resulted in significantly lower overtime and sick leave; in the maintenance reject-rework, the drop was from 5.9 to 1.1 percent.

Officials at many of the sites noted that by focusing attention on productivity, gainsharing efforts provided information helpful in uncovering and resolving administrative problems, inadequate management control systems, impediments to greater productivity. At Pearl Harbor Naval Shipyard, for instance, the gainsharing test program was an insufficiently detailed reporting system. The method subsequently developed for the gainsharing effort proved so effective that service officials are considering implementing it at all Navy shipyards.

Despite the success of DoD gainsharing efforts, department officials see impediments to wider implementation. Specifically, they cite rigid controls that limit flexibility in design and operation of equipment, and the lack of

from the Office of Personnel Management. Concurring with these sentiments, the GAO auditors reported that specific legislation could allay many of the current misgivings. They also suggested that the Office of Personnel Management could better explain its position on gainsharing in regulations and in the federal personnel manual on employee-incentive programs. Among the aspects these revisions should address is the granting of administrative time off in lieu of monetary awards for achieving gains in productivity.

After analyzing information collected during their study, the authors concluded that eight elements were critical to the success of gainsharing

efforts. Topping the list was the continuous and visible support of all management levels. Second was employee participation in the design and implementation of the program; that feature has proved valuable in private-sector efforts, though it may require that managers change from an autocratic to a participatory management style. Also needed are definable and practicable measures of performance and an evaluation formula that employees understand and accept. Other elements that the evaluators mentioned were a workload sufficient to absorb increased productivity, the availability of materials needed to do the work, union participation where appropriate, and con-

tinuous feedback to workers.

In closing, the auditors commented that DoD's gainsharing efforts have demonstrated the ability of individual and small-group programs to promote cost savings and operational efficiencies. This is particularly true of programs featuring occupations with repetitive and easily definable tasks, reliable standards for measuring performance, and computerized systems for recording and tracking labor charges and other costs. They point out, however, that DoD and federal officials still need to determine whether large-group participative gainsharing, which has fared well in industry, can enjoy equal success in a government work environment.

The current statutory framework for federal procurement: An overview and recommendation

Procurement Round Table, 1350 New York Avenue, N.W., Suite 615, Washington, DC 20005, (302) 393-1780

Swelling the chorus of those calling for far-reaching government procurement reform is the Procurement Round Table, a nonprofit corporation which studies, disseminates information on, and recommends improvements to the federal procurement system. Its members, who serve *pro bono*, are private citizens with extensive experience in federal procurement.

In April of this year, the corporation issued a report which emphasizes "the long-overdue need for a single, government-wide, policy-oriented procurement statute," in the words of Elmer B. Staats, chairman of the group and former Comptroller General of the United States.

to the two basic statutes that have governed federal procurement for nearly 40 years, the Armed Services Procurement Act and the Federal Property and Administrative Services Act. Though the 1984 legislation fundamentally altered the two earlier laws, it neither consolidated nor simplified them.

The 1940s statutes paralleled one another in the beginning, but separate amendments over the years have resulted in significant differences today. The discrepancies affect key areas such as proprietary data restrictions, contractor guarantees, allowable costs, penalties, and progress payments. The net effect, according to the Round Table report,

it harder to train the federal procurement work force."

The corporation cites other shortcomings in current procurement legislation as well. Among them are statutory language that is overly detailed and sometimes ambiguous and definitions that are either inconsistent or omitted altogether. The group concludes that the nation now "has the most complex and inconsistent statutory framework for federal procurement we have ever known."

Given the billions of tax dollars the government spends annually on goods and services, the nation deserves better, in the opinion of Round Table members. They advocate a unified, government-wide procurement statute and imposition of controls over the enactment of special provisions applicable to individual agencies. In outlining an approach to achieve this goal, the group suggests establishment of a joint congressional procurement committee to draft and oversee such legislation and reestablish

report synopsis

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Another study, conducted by the New York Stock Exchange in 1982, found that organizational and large-

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Several activities noted in the study resulted in significant benefits as well. The Navy's Naval Air Station, San Diego, reported the elimination of work backlog, an 80-percent drop in time lost on-the-job injuries, and a substantial decrease in overtime. Through its gainsharing program, the Army's Redstone Arsenal eliminated work backlog and reduced turnover by 80 percent and 6 percent, respectively. At the Sacramento Army Depot, California, gains resulted in significantly lower overtime and sick leave; in addition, the maintenance reject-rework rate dropped from 5.9 to 1.1 percent.

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Study affirms lure of enlistment bonuses

Money talks and it does so in a language that prospective Army recruits understand.

For several years, the Army has offered \$5,000 cash bonuses to high-aptitude individuals who sign up for four years in a special-skill category. The results have buoyed the spirits of manpower officials grappling with a growing demand for individuals capable of operating and maintaining the service's sophisticated equipment. And now, a recently completed DoD-RAND Corporation study suggests that larger bonuses would attract even greater numbers of high-caliber young people willing and able to do jobs requiring priority skills.

From July 1982 through June 1984, manpower researchers examined three different enlistment-bonus programs to assess their relative merits in attracting high-quality recruits in hard-to-fill skill categories. The alternatives were the current \$5,000, four-year program; an \$8,000, four-year package; and a dual-option plan offering \$8,000 for four years or \$4,000 for three. Each was tested in different but demographically comparable locales.

The two expanded programs enticed more recruits than did the current one. The second and third approaches led to 37 percent and 49 percent more enlistments, respectively. Particularly popular among the high-quality cohort was the \$4,000,

that bonuses are a more expedient means for managing enlistment flows and achieving special recruiting objectives than are less flexible alternatives such as increased pay and benefits. (*RAND Defense Manpower Research Center research brief 2008: July 1986*)

DoD contract dollars go West and South

Nearly a fourth of the \$136 billion in prime contracts the Pentagon awarded in fiscal 1986 went to contractors in the live states that make up the Pacific Coast region—California, Oregon, Washington, Alaska, and Hawaii. Even so, the \$11 billion in contract dollars that went to companies in that area was \$2.4 billion below the same figure for FY 1985.

The South Atlantic region was the second largest beneficiary, receiving \$22.2 billion in prime contracts, followed by the Middle Atlantic region at \$17.3 billion.

States in the Mountain region (\$6.2 billion) and deep South (\$4.9 billion) increased their share of DoD contract dollars by 17 and 23 percent, respectively. (*Government Executive: May 1987*)

DoD revises definition of high school graduate

In a move expected to reduce attrition among first-term enlistees, DoD has narrowed its definition of high school graduate.

Under the new standard, which becomes effective for regular enlistments on October 1, 1987, service offi-

who earned a diploma from a high school following completion of 12 years of classroom instruction and those who obtained a diploma through nontraditional means and who have completed at least 15 semester (or 20 quarter) hours of college.

No longer will the services regard "alternative credentials," including general education, test-based, and home-study certificates, as high school diplomas. The new definition applies only to new recruits, however, not to current servicemembers.

Defense officials estimate that each first-term attrition costs the government \$18,400. They expect the tightened standard to result in savings of \$22 million annually. (*Army Times: April 20, 1987*)

Private sector managers net modest gains in '86

According to survey findings of a Pennsylvania-based professional association, annual salaries for middle managers in the U.S. rose 3.4 percent in 1986, with pay raises in the South outpacing those in other regions.

Last year, the average salary of mid-level managers in 95 American cities was \$35,300. Plant managers were the highest-paid group, followed by sales managers and personnel directors.

For the third consecutive year, managers in the West outearned their counterparts in other regions of the country. Researchers found the highest mid-management salaries in the utilities sector, followed by manufacturing

Of the 2,000 firms participating in the study, 58 percent based management increases solely on merit, 19 percent on a combination of merit and cost-of-living considerations, and 19 percent strictly on the latter. (*Administrative Management Society news release: May 1987*)

Book puts management on fast track to fitness

In his latest installment of the One Minute Manager Library, Dr. Kenneth Blanchard outlines a commonsense approach to health and fitness.

For the besieged and sedentary manager, the 160-page book, entitled *One Minute Manager Gets You in Shape*, represents a practical manifesto for shaping a life balancing the demands of job and family.

Noting that health is the residue of lifestyle, the book offers catchy words of encouragement and an assortment of entertaining observations and facts. For example, he reports that a single, nonfatal heart attack costs an employer at least \$25,000 and that absenteeism is 40-percent higher for smokers.

Blanchard also provides Professor's Dozen—12 non-nouncements that a manager seeking a happier, more healthful existence should be able to make. Among the statements are, "I love most of the time. I eat fast every day. I wear belts, and I have no more than seven alcoholic drinks per week." (*The One Minute Manager*)

Conference and Exposition on Future Transportation Technology

Aug 10-13 Seattle, WA
1987 SAE Aerospace Technology Conference and Exposition

Oct 5-8 Long Beach, CA
CONTACT: (412) 776-4841
Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096

1987 International Logistics Symposium

Aug 18-20 St. Louis, MO
CONTACT: (205) 539-3800
Society of Logistics Engineers, Park Plaza, Suite 922, 303 Williams Avenue, Huntsville, AL 35801

Seminar on Manufacturing Principles and Practices

Aug 31-Sep 2 San Diego, CA
30th Annual International Conference and Technical Exhibit
 Oct 19-23 St. Louis, MO
CONTACT: (703) 237-8344
American Production and Inventory Control Society, 500 West Annandale Road, Falls Church, VA 22046-4274

Ada Programming and Software Engineering: Hands-On Introduction

Sep 15-18 San Diego, CA
 Sep 29-Oct 2 Washington, DC
 Nov 17-20 Los Angeles, CA
CONTACT: 800-421-8166
Integrated Computer Systems, 5800 Hennum Avenue, P.O. Box 3614, Culver City, CA 90231-3614

Sixth Annual Logistics Research and Development Conference on Combat Support

Sep 23-24 Dayton, OH
Chemical/Biological Operations and Survivability Symposium (SECRET)

Oct 27-29 Fort McClellan, AL
Avionics Technical Symposium (SECRET)
 Nov 18-19 Fort Eustis, VA

CONTACT: (703) 522-1820
American Defense Preparedness Association, Rosslyn Center, Suite 900, 1700 N. Moore Street, Arlington, VA 22209-1942

42nd Annual Transportation and Logistics Forum

Sep 27-30 Little Rock, AR

727 N. Washington Street, Suite 200,
 Alexandria, VA 22314-1976

Tenth Annual Federal Computer Conference

Sep 29-Oct 1 Washington, DC
CONTACT: 800-343-6694
The Federal Computer Conference, P.O. Box N, Wayland, MA 01778

Common Defense '87

Oct 7-9 Arlington, VA
CONTACT: (703) 892-1888
ComDef '87, Suite 1301, Crystal Square 2, 1725 Jefferson Davis Highway, Arlington, VA 22202

26th U.S. Army Operations Research Symposium

Oct 14-15 Fort Lee, VA
CONTACT: (301) 278-6576 or AUTOVON 298-6576
Director, U.S. Army Materiel Systems Analysis Activity, ATTN: AMXS-DA, Aberdeen Proving Ground, MD 21005-5071

Tough Positive Management

Oct 14-16 Washington, DC
 Nov 4-5 San Francisco, CA
 Dec 7-9 Washington, DC
CONTACT: (703) 527-8700
The Institute for Professional Education, 1515 North Court House Road, Suite 303, Arlington, VA 22201

36th Defense Conference on Nondestructive Testing

Oct 26-29 St. Louis, MO
CONTACT: (314) 263-1786 or AUTOVON 693-1786
U.S. Army Aviation Systems Command, ATTN: AMSAV-OT, 4300 Goodfellow Blvd, St. Louis, MO 63120-1789

Government-Industry Data Exchange Program Annual Workshop

Oct 26-29 Kansas City, MO
CONTACT: (714) 736-4677
GIOEP Annual Workshop, GIDEP Operations Center, Corona, CA 91720

Ninth Interservice/Industry Training Systems Conference

Nov 30-Dec 2 Washington, DC
CONTACT: (817) 640-5000